Incidence of Extra-Floral Nectaries and their Effect on the Growth and Survival of Lowland Tropical Rain Forest Trees

Honors Research Thesis

Presented in Partial Fulfillment of the Requirements for graduation "with Honors Research Distinction in Evolution and Ecology" in the undergraduate colleges of The Ohio State University

by
Andrew Muehleisen

The Ohio State University
May 2013

Project Advisor: Dr. Simon Queenborough, Department of Evolution, Ecology and Organismal Biology

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Andrew Muehleisen

Evolution, Ecology & Organismal Biology, The Ohio State University, OH 43210, USA

Summary

Mutualistic relationships between organisms have long captivated biologists, and extra-floral nectaries (EFNs), or nectar-producing glands, found on many plants are a good example. The nectar produced from these glands serves as food for ants which attack intruders that may threaten their free meal, preventing herbivory. However, relatively little is known about their impact on the long-term growth and survival of plants. To better understand the ecological significance of EFNs, I examined their incidence on lowland tropical rain forest trees in Yasuni National Park in Amazonian Ecuador.

Of those 896 species that were observed in the field, EFNs were found on 96 species (11.2%), widely distributed between different angiosperm families. This rate of incidence is high but consistent with other locations in tropical regions. Furthermore, this study adds 13 new genera and 2 new families (Urticaceae and Caricaceae) to the list of taxa exhibiting EFNs.

Using demographic data from a long-term forest dynamics plot at the same site, I compared the growth and survival rates of species that have EFNs with those that do not. This same analysis was also done with data from two other sites with EFN surveys, Barro Colorado Island, Panama and Pasoh Forest Reserve, Malaysia. Results showed that while species with EFNs have generally higher diameter growth rates, they also have higher mortality rates than species without, suggesting a cost to this ecological strategy.

Keywords: extra-floral nectaries, tropical forest, growth rate, mortality rate

Introduction

Tropical forests represent a fascinating yet incredibly complex web of interactions, the ecology of which, in many cases, is still largely enigmatic, and the mechanisms that generate and maintain the remarkable diversity of plants and animals found within them remain a fundamental question in biology (Palmer 1994, Hubbell 2001, Wright 2002). While one suite of mechanisms are purely stochastic in nature (e.g. Hubbell 2001) many other mechanisms depend on niche differences between species to permit coexistence (Chesson 2000, Silvertown 2004). Niche differences are driven primarily in response to selection pressures, which in tropical forests include competition with neighbors for (often low levels of) light, nutrients and water (Chapin et al. 1986, Denslow et al. 1987, Chazdon & Pearcy 1988), as well as intense predation pressure from pests, pathogens and herbivores (Barone 2000, Novotny et al. 2010).

Herbivory represents a particularly selective force, as up to 20% of plant net primary production may be consumed each year (Agrawal 2011). In response, tropical rain forest trees have developed a myriad of defense mechanisms, from physical (e.g. spines, hairs; Hanley et al. 2007) to chemical (e.g. low nutrition, toxic compounds; Feeny 1976, Levin & York 1978, Coley & Barone 1996). Further, many plants have evolved mutualistic relationships with animals in an effort to deter herbivores. A common mutualism is with ants and such ant-plant relationships offer a considerable measure of defense from herbivory, and can have a positive impact on plant performance (Beattie 1985).

One such example of ant-plant mutualisms are extra-floral nectaries (EFNs), which are nectar-producing glands found outside of a plant's flower, typically at the base of the leaf or on the petiole, although their location can vary considerably on the plant (Figure 1). EFNs vary in morphology, ranging from raised bowls or bulbs to very small hairs and tissues (Elias 1983). The nectar produced by these

glands serves as a food source, primarily for ants, which are believed to provide protection to the plant in return, by way of aggression toward intruding organisms including herbivores (Bentley 1977a, Keeler 1977, 1989, Koptur 1992). This form of ant protectionism can result in reduced damage to both vegetative and reproductive parts, improving plant performance and fitness (Koptur 1992, Oliveira 1997). However, relatively little is known about their overall ecological impact at the population and community levels as well as on the long-term performance of individual plants.

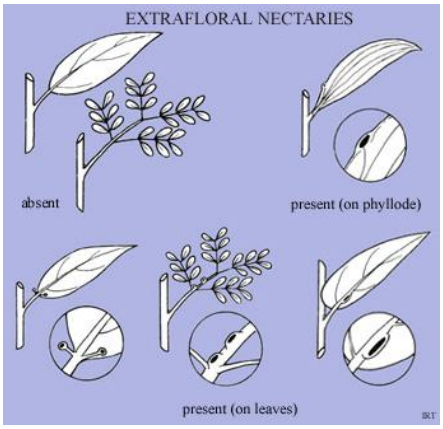

Fig. 1 Example structure and locations of extra-floral nectaries on plants. Source: Australia Biological Resources Study (environment.gov.au/biodiversity/abrs)

Previous intensive surveys have determined the incidence of EFNs on Barro Colorado Island, Panama (Schupp & Feener 1991) and in the Pasoh Forest Reserve, Malaysia (Fiala & Linsenmair 1995). These studies provided an excellent picture of the distribution of EFNs at these sites, and until last year were the best data available on the phylogenetic distribution of EFNs. However, new work has drawn together all available data on EFN incidence currently known, to examine the phylogenetic distribution of EFNs throughout the plant phylogeny (Weber & Keeler 2012). This study found 1.0-1.8% of plant species had EFNs, distributed in 108 families, although the authors suggest that the unknown incidence of EFNs may be as great as the their currently known incidence (Weber & Keeler 2012), requiring further in-depth studies of EFN incidence within and between plant communities.

In this study, I expand upon our prior understanding by undertaking an intensive survey of EFN incidence of tree species in an old growth Neotropical aseasonal lowland rain forest, an environment that has not yet been studied for EFNs. I analyze the long-term demographic rates of trees with and without EFNs to elucidate the ecological significance of this defensive strategy. In a large permanent forest plot in Yasuni National Park, Ecuador, I examined 896 species of tree for the presence or absence of EFNs. I used published census data to compare abundance, and growth and mortality rates of trees with and without EFNs. Finally, I also used the results of surveys in BCI and Pasoh to examine how plant performance is related to EFN incidence there, such that a comparison of the phylogenetic distribution and demographic rates related to EFN can be made between three study sites. If mutualism with ants, and EFNs in particular, provide a benefit, I predict higher abundance and greater performance in species with EFNs.

QUESTIONS

1. What is the incidence and phylogenetic distribution of extra-floral nectaries on trees in a lowland Neotropical rain forest?
2. Do trees with extra-floral nectaries have different abundances, and growth and mortality rates than trees without extra-floral nectaries?
3. How do findings from our study site compare with other locations in which the incidence of extra-floral nectaries have been studied?

Methods

STUDY SITES

I carried out fieldwork in Yasuni National Park, Ecuador, and used published data from Barro Colorado Island, Panama (Feener & Schupp 1991) and

Pasoh Forest Reserve, Malaysia (Fiala & Linsenmair 1995) on the incidence of EFN (Figure 2).

Yasuni National Park and adjacent Huaorani territory comprise 1,600,000 ha of largely pristine tropical lowland aseasonal rain forest in eastern Ecuador (Finer et al. 2009, Bass et al. 2010). Yasuni Scientific Research Station, established and maintained by the Pontificia Universidad Catolica del Ecuador, is located in the north-western corner of the park, in terra-firme, mature forest bordering the Tiputini River. The research station maintains a 25 ha Forest Dynamics Plot (FDP, 0°41'S, 76°24'W), which lies along two smaller ridges dominated by red clays and separated by a valley characterized by brown or grey alluvium (Valencia et al. 2004). The plot is extremely biologically diverse, with a described tree species count of 1,104 (Valencia et al. 2004). The climate at Yasuni is aseasonal, with an average annual rainfall of 2,826 mm, with no month receiving less than 100 mm of rainfall (Valencia et al. 2004).

Barro Colorado Island (BCI), Panama is a 1,560 ha island located in Gatun Lake, formed when the Panama Canal was developed. The 50 ha Forest Dynamics Plot was established in 1980 and is maintained by the Smithsonian Tropical Research Institute (STRI). The FDP is located near the center of BCI (9°9'S, 79°50'W) and consists primarily of lowland moist tropical forest, about half of which is mature growth. There is a relatively high diversity of trees at the FDP, with 321 different species of tree recorded. The climate at BCI is seasonal, with a dry season lasting roughly from December to April or May and an average annual rainfall of 2,551 mm (Leigh et al. 2004).

Pasoh Forest Reserve, Malaysia is a 11,000 ha reserve situated in peninsular Malaysia. The 50 ha Forest Dynamics Plot situated within the reserve (2°58'N, 102°18'E) was established in 1986 and is and maintained by the Forest Research Institute Malaysia. The forest consists primarily of lowland mixed dipterocarp forest, and is surrounded by roughly 1,000 ha of previously logged forest. The FDP at Pasoh has a tree diversity of around 824 species. The climate at Pasoh is seasonal, with dips in precipitation in January-February and June-July, and an average annual rainfall of 1,571mm (Manokaran et al. 2004).

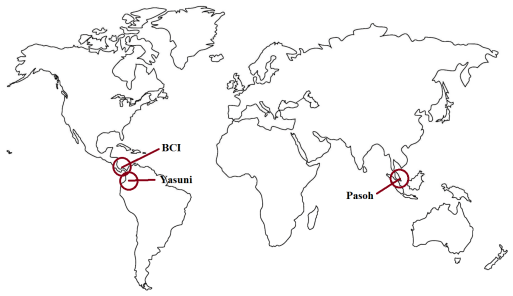

Fig. 2 Locations of Yasuni National Park, Barro Colorado Island and Pasoh Forest Reserve

FIELD SURVEYS

I undertook a survey for incidence of extra-floral nectaries on woody species at Yasuni in June-August 2012. Species were censused in three ways. In the field, I searched along trails within and around the FDP and found 787 species. A further 109 rare species were found by searching for specific individuals within the FDP. In this way, I examined a total of 896 species in the field (81% of the total 1,104 species in the FDP). The remaining 208 species that I could not find in the field were checked from dried specimens in the field station herbarium. This method was effective for those plants with obvious nectary structures (e.g. Fabaceae), although dried structures are much more difficult to identify than living structures. Therefore, species with EFNs determined in the herbarium were included only in demographic analysis.

Data on the incidence of extra-floral nectaries for species from the other two sites were obtained from Schupp & Feener (1991, BCI) and Fiala & Linsenmair (1995, Pasoh). I added to these data with new data from Croat (1978) and Garwood (2009), for species located in the BCI FDP.

DEMOGRAPHIC DATA

At all three sites, identical methodology was followed to establish large forest plots. All plots were professionally surveyed, and within them every shrub and tree stem >1 cm diameter at breast height (DBH, 1.3m) are mapped, marked, measured and identified every 5 years (Condit 1998). To date, three censuses have been carried out at Yasuni, four at BCI and three at Pasoh. All demographic data can be found at the Center for Tropical Forest Science website (www.ctfs.si.edu, for a summary, see Table 1).

From these census data, demographic rates have been calculated (Condit et al. 2006). Annual mortality (survival from one census to the next) and growth rates (diameter increment) were determined using Bayesian hierarchical models. Abundance and demographic rates were calculated for each species for individuals in two size classes: 1-10 cm DBH and >10 cm DBH. For consistency, census years leading up to or closest to the year 2000 were used. For each species, I also assigned growth form (shrub, treelet, understory tree, canopy tree or emergent tree). Finally, the higher-level taxonomy for each site was updated to reflect the Angiosperm Phylogeny Group III (APG III) system (The Angiosperm Phylogeny Group 2009).

DATA ANALYSIS

To examine the taxonomic distribution of extra-floral nectaries, I compared the proportions of individuals, species, genera, families, and orders with EFNs at each site using a proportion test. To test whether species with EFNs were more abundant than species without, and also whether species with EFN had higher growth rates and higher mortality rates, I used linear regression. All data analysis was completed in the statistics package R version 2.15.1.

Results

I surveyed shrub and tree species at three tropical forest sites for extra-floral nectaries. At Yasuni, I censused 896 species out of 1,104 species on the FDP. At BCI, Schupp & Feener (1991) surveyed 173 species, though only 150 of these are present on the FDP (of 321 total). Using additional references, I added another 24 species with EFNs. At Pasoh, Fiala & Linsenmair (1995) surveyed 741 out of 824 species. Thus, I have a good sample of the species at each site, and most of the unsurveyed species are rare and thus non-representative of the community as a whole. Details of species from each site with EFN can be found in Appendix 2.

TAXONOMIC DISTRIBUTION

At Yasuni, I found 96 species with extra-floral nectaries (11.2% of the total 896 species, Figure 3a). These were distributed among 41 genera and 17 families. Over half (58) of the species with EFNs were in the family Fabaceae, largely thanks to the diversity of *Inga* (44 species) at Yasuni, all of which have EFNs. Seventy-nine percent of all species with EFNs were found within either the Fabales or Malpighiales orders. In addition, I documented 13 new genera and 2 new families (Caricaeae and Urticaceae) to the global list of taxon exhibiting EFNs (Keeler 2013).

At BCI, 49 (32.7%) of 150 species of tree were found to have EFNs (Schupp & Feener 1991, Figure 3b). They were distributed among 31 genera and 19 families (Figure 2b). Eighteen species with EFNs were in the family Fabaceae, also due largely to the diversity of *Inga* (15 species). Similar to Yasuni, 61% percent of all species with EFNs were found within either the Fabales or Malpighiales orders.

At Pasoh, 80 (9.7%) of 824 species were found to have EFNs (Fiala & Linsenmair 1995, Figure 3c). They were distributed among 47 genera and 16 families. Unlike Yasuni and BCI, Pasoh exhibited a more even distribution of EFN bearing trees across different taxa. Euphorbiaceae, rather than Fabaceae, exhibited the most species with EFNs (21 species). Forty percent of all species with EFNs were in the order Malpighiales, while the next most important order was Malvales containing 17.5% of species with EFNs.

Across all study sites, Yasuni and Pasoh were

Table 1 Demographic rates and abundances for all tree species per hectare across all three sites. Growth is measured in mm per year, mortality in % per year and abundance in individuals per ha.

		1-10 cm DBH			>10 cm DBH		
		Yasuni	Pasoh	BCI	Yasuni	Pasoh	BCI
Growth	Min	0.79	1.02	0.90	0.22	0.27	0.27
	Max	6.25	3.13	8.69	3.01	1.66	4.22
	Mean	1.76	1.57	2.53	0.74	0.60	1.04
	SD	0.62	0.26	1.30	0.39	0.20	0.60
Mortality	Min	0.27	0.43	0.23	0.36	0.51	0.33
	Max	20.41	19.21	30.90	16.68	7.58	17.70
	Mean	2.04	1.99	4.31	1.49	1.87	2.72
	SD	2.27	1.67	4.66	1.02	0.75	2.20
Abundance	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	184.60	159.88	638.56	71.96	11.16	36.56
	Mean	5.64	6.51	21.10	0.72	0.69	1.99
	SD	13.10	14.71	70.45	2.91	1.33	4.31

most similar in their proportion of species with EFNs (11.2% in Yasuni, 32.7% in BCI, and 9.7% in Pasoh). BCI exhibited an incidence of species with EFNs up to three times greater than Yasuni and Pasoh, and at all taxon levels, BCI showed greater proportions of plants with EFNs than both Yasuni and Pasoh. However, BCI exhibited a much lower incidence of EFNs at the individual level compared with other study sites. The distribution of species with EFNs in each family for each site can be seen in Figure 4.

ABUNDANCE, AND GROWTH AND MORTALITY RATES

Species varied widely in their abundances, growth and mortality rates (Table 1). Species at BCI were on average three times more abundant than species from Yasuni and Pasoh, which reflects the lower species richness found at BCI. Both growth and mortality rates were also much higher at BCI than those found at Yasuni or Pasoh.

In accordance with my prediction, species with EFN had higher mean abundance than species without EFNs at Yasuni and Pasoh, but this was not the case at BCI (Figure 5 a, b, c). At Yasuni, species abundances for trees with EFNs were 25-30% greater than those without. At Pasoh, these differences were even greater, where those species with EFNs were 114-117% more abundant than those without. In contrast, at BCI trees in the small size class without EFNs were almost 170% more abundant, and abundances were lower for those individuals >10 cm DBH.

Significantly greater growth rates were found in trees with EFNs in each plot, although this differed with size class between sites. At Yasuni, trees with EFNs in both size classes had higher growth rates, growing about 0.28 mm extra per year than species without EFNs. At BCI only trees in the small size class had significantly higher growth rates, and at Pasoh only trees in the large size class (Figure 5e, f).

Significantly higher mortality rates were found for species with EFN in the large size class (trees >10 cm DBH) at all three sites (Figure 5g, h, i), and in Pasoh trees 1-10 cm DBH also had significantly higher mortality rates. In all cases growth and mortality rates were found to be either greater or the same in trees with EFNs.

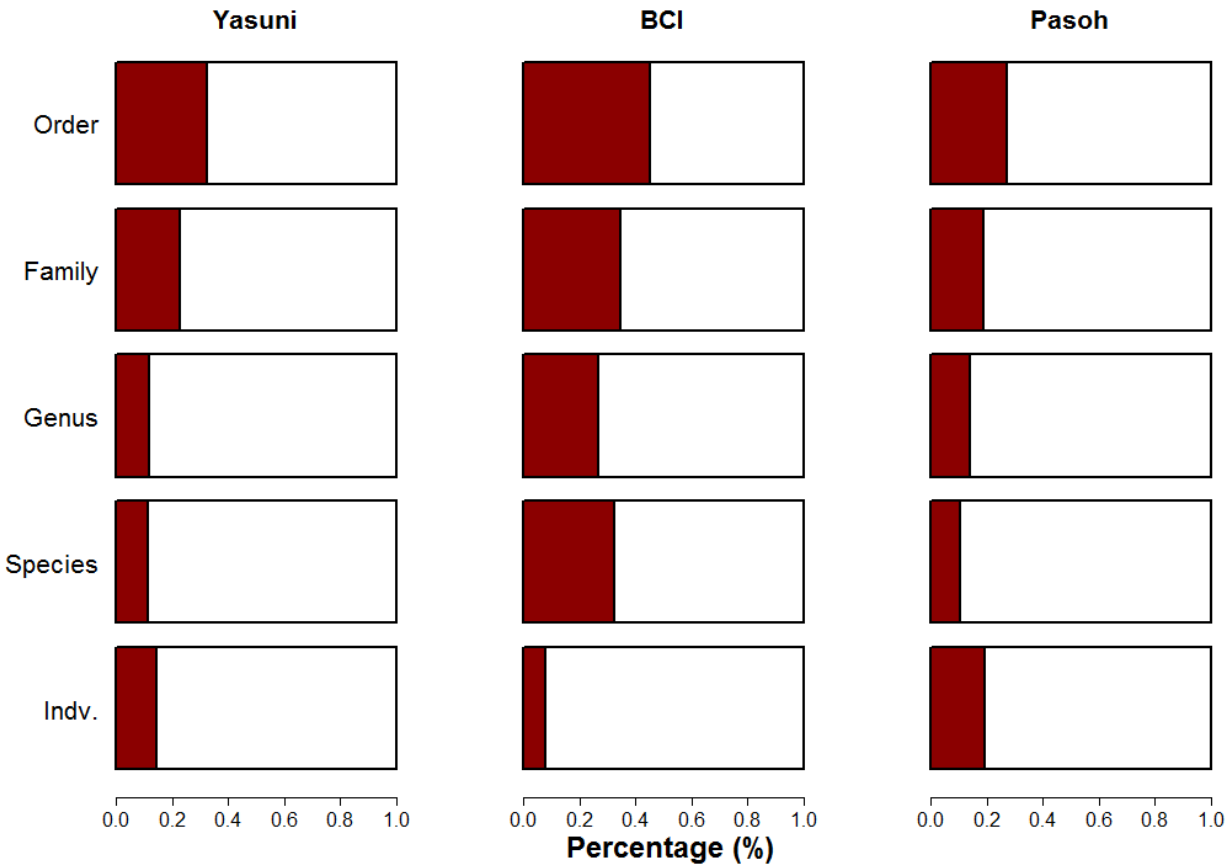

Fig. 3 Proportion of trees that exhibit EFNs at the individual and varying taxonomic levels, by location.

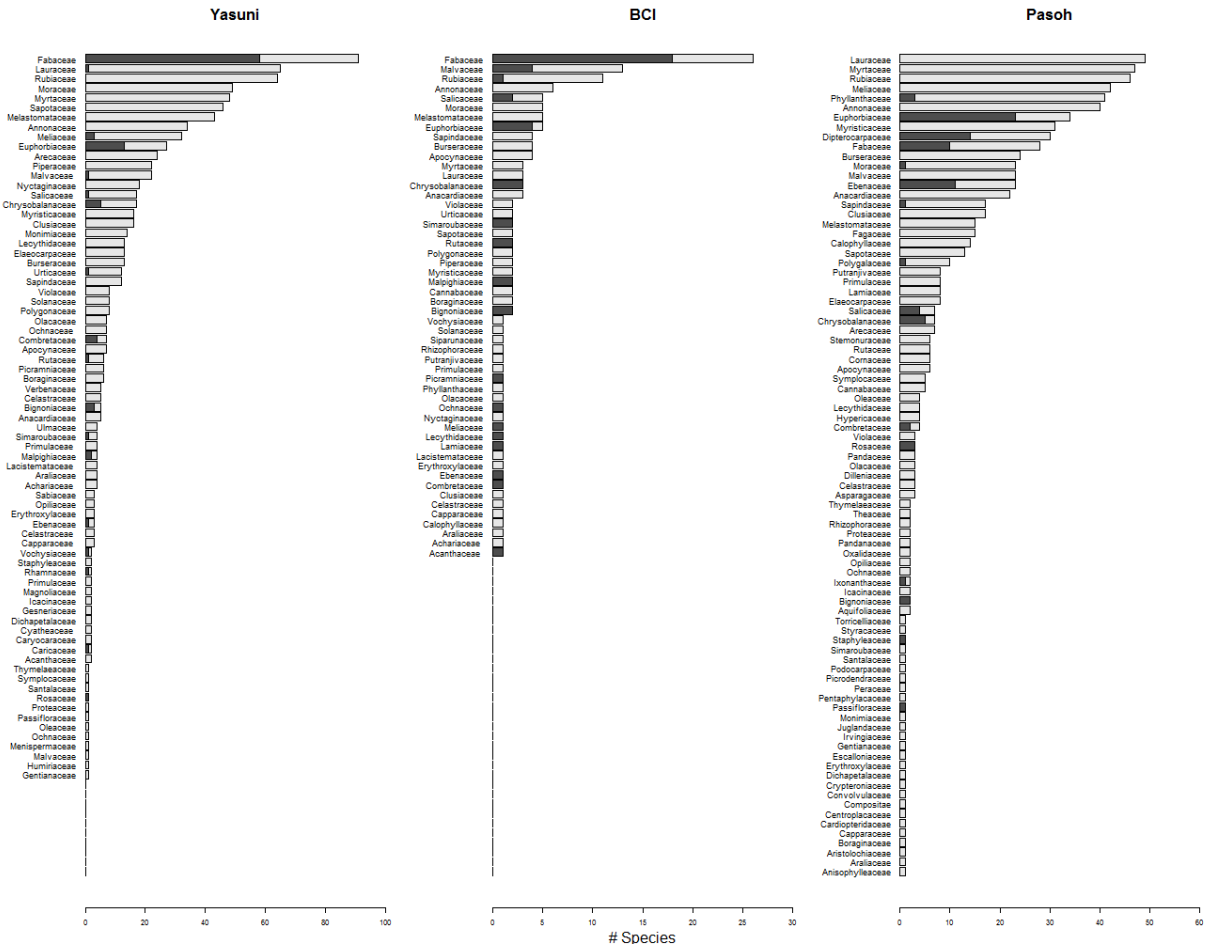

Fig. 4 Number of species examined in each family at each site, with dark bars representing species with extra-floral nectaries.

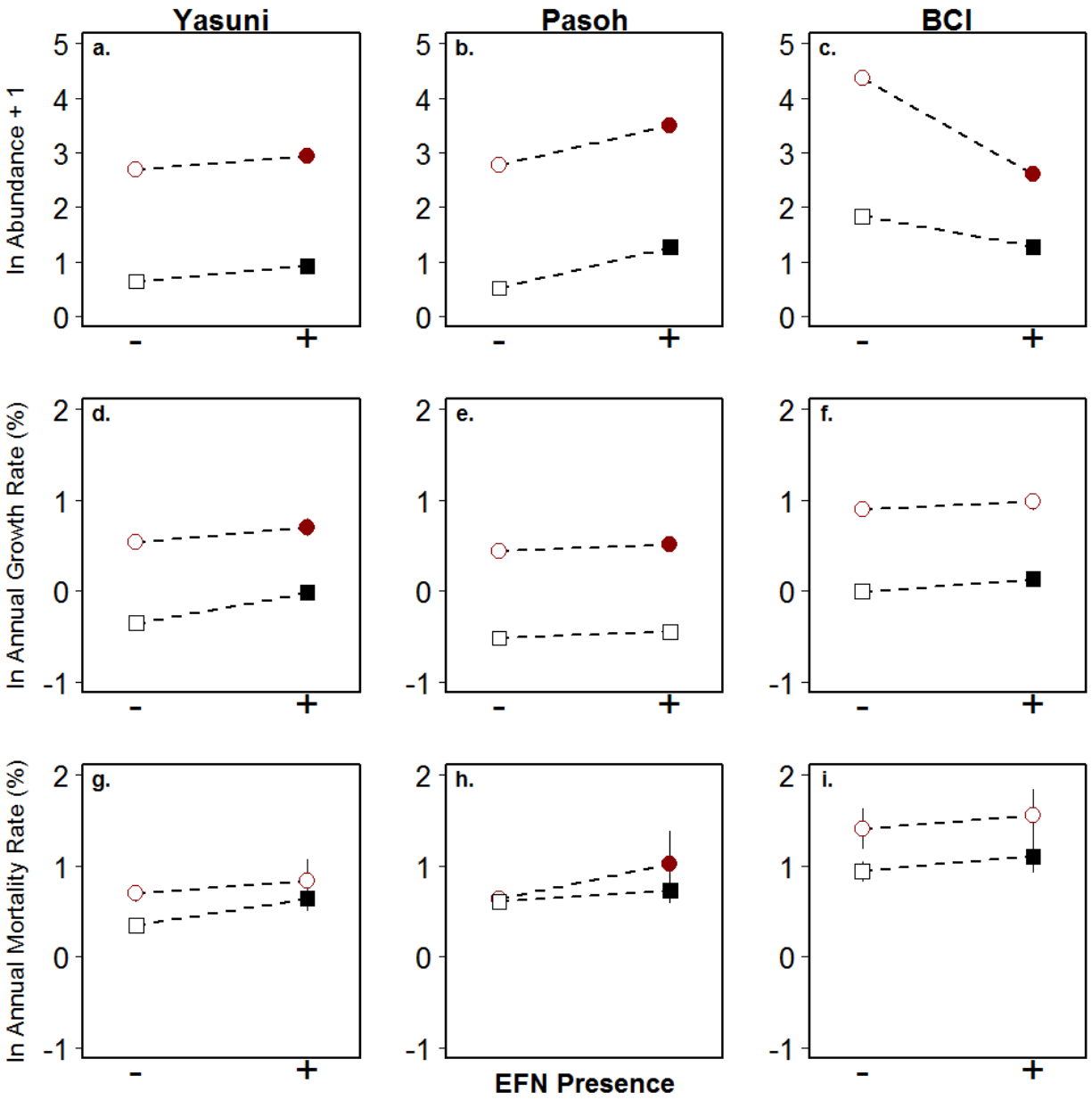

Fig. 5 Abundance (a,b,c), and growth (d,e,f) and mortality (g,h,i) rates as a function of EFN presence in shrub and tree species in three tropical forest sites. Points are mean values per EFN group, split into two size classes: trees $\leq$10 cm DBH (red circles),trees >10 cm DBH (black squares). Points connected by dashed lines that are filled indicate statistical difference at $P < 0.05$. Error bars show 95% confidence intervals.

Discussion

From an intensive field survey of 896 tree and shrub species in an Amazonian lowland tropical rain forest, I documented 96 species with extra-floral nectaries, 64 of which had not previously been recorded as possessing EFNs. Comparing Yasuni with two other intensive survey sites, I found that the distribution of EFNs across taxa was consistent between Yasuni and Pasoh, and broader at BCI. The reverse was found to be true in terms of total EFN presence on individuals at each plot. Species with EFNs appeared to be more successful ecologically at Yasuni and Pasoh, having higher abundance than species without EFNs, while at BCI the opposite was true. Further, I found a significant effect of EFN incidence on long-term plant performance. Tree species with EFNs showed higher growth and mortality rates compared to those without EFNs at all three sites in at least one size class.

TAXONOMIC DISTRIBUTION AT YASUNI

This study adds 13 new genera and 2 new families (Caricaeae and Urticaceae, Appendix 1) to the list of taxon exhibiting EFNs. This increases the global number of familes with EFNs to 110, 17 of which are found at Yasuni. The family with the most number of EFNs at Yasuni was Fabaceae, which is also true globally. However, the family Euphorbiaceae had the second highest incidence of EFNs at Yasuni, which stands in contrast to global patterns which show Passifloraceae and Malvaceae as second and third, respectively. Only one species from Malvaceae had nectaries at Yasuni, while there were none from Passifloraceae, although I did not survey any vines and lianas, the predominant growth form of Passifloraceae. The presence of EFNs at Yasuni was much greater than the currently known worldwide incidence (11.2% at Yasuni, to 1.5% worldwide, Weber & Keeler 2012).

TAXONOMIC DISTRIBUTION BETWEEN SITES

All three locations exhibited fairly equivalent distribution of EFNs across taxon, with BCI representing the greatest breadth of distribution. Oddly, BCI also exhibited the lowest total number of individuals with EFNs, despite the wide taxonomic distribution and greater number of species relative to Pasoh and Yasuni. Pasoh, which overall had the smallest phylogenetic distribution and species count of those trees with EFNs, had the greatest number of individuals with nectaries. It is not certain what might cause this trend, though care should be taken labeling this a trend from only three plots. This relationship could be examined in other plots to determine whether a trend truly exists.

In Yasuni, BCI and Pasoh the orders Fabales and Malpighiales are well represented by species with EFNs, with at least 10 species being found in each order with EFNs. Unlike in BCI and Yasuni, the orders Ericales and Malvales were also found to have at least 10 species with EFNs in Malaysia, according to Fiala & Linsenmair (1995). EFNs were found in both of these families in BCI and Yasuni, but not to the extent that they were found in Pasoh. As such, despite an overall smaller distribution of EFNs across orders in Pasoh (27% in Pasoh, as opposed to 33% and 36% in Yasuni and BCI, respectively), more families were well represented by species with EFNs. BCI and Yasuni, then, have a thinner distribution of EFNs across orders. This is generally the case for families as well, as those orders with many EFN bearing species in Pasoh are this way due to particularly well-represented families (Dipterocarpaceae, Ebenaceae, Euphorbiaceae and Fabaceae). This, in large part, reflects the different floristic composition of Paleo vs Neotropical forests (Gentry 1993).

GEOGRAPHIC DISTRIBUTION

An increase in EFN presence as latitude decreases has been noted previously (Pemberton 1998), but it is also informative to examine how EFN distribution changes across different habitat types at similar latitudes. Yasuni and Pasoh, which are two lowland

tropical rainforests at comparable latitudes, are very similar in their incidence of EFNs (11.2% and 9.7%, respectively) suggesting little difference in distribution between the Neotropics and Paleotropics, as represented by these two sites. The slightly higher incidence in the Neotropics may be attributed to the greater diversity of Fabaceae found there (Gentry 1993).

Within the Neotropics, the Brazilian cerrado has also been surveyed for the presence of EFNs. An incidence of about 17% of woody plants with EFNs was found in the cerrados, which are considerably drier than rain forest (Oliveira & Leitao-Filho 1987). Perhaps the greater presence of EFNs found in the cerrado indicates that ant-plant interactions are stronger in this type of habitat. Further work in understanding the differences in ant diversity and presence between these two habitats may better inform our understanding of this mutualism across geographically similar habitats.

ECOLOGICAL SIGNIFICANCE OF EXTRA-FLORAL NECTARIES

Differences found in growth, mortality and abundance rates in those trees with EFNs and those without are surprising, given the large and significant differences in performance I found contingent on the presence of a single character. Nonetheless, greater growth and mortality rates were characteristic of tree species with EFNs across all three sites. This consistency suggests that species with EFNs grow faster and die younger than species without EFNs. Why, then, is a higher mortality rate associated with a defense trait that is assumed to improve plant performance? This general lifestyle is informative in that it may suggest that many of those trees with EFNs are pioneer species. Pioneer species generally exhibit faster growth rates and higher mortality rates compared with more slower growing but persistent shade-tolerant species (Brokaw 1985). Additionally, pioneer species undergo intense competition following the formation and colonization of a gap (Denslow 1980, Denslow et al. 1985), lending increased importance to adaptive strategies such as EFNs. In this sense, pioneer species may exhibit EFNs more commonly than shade-tolerant species, and explain this observed difference in demographic rates.

Abundances were also significantly different, though those at BCI showed the reverse trend in abundance compared with Pasoh and Yasuni. The higher abundances observed at Yasuni and Pasoh suggest that this defensive strategy has a positive impact on the plant's ability to out-perform species without this adaptation, and also counteracts the suggestion that differences in performance are driven by pioneer species, because these light-demanders tend to be rare (Wright 2002).

Conclusions

I found similar phylogenetic distributions of extra-floral nectaries in comprehensive surveys of tree species of an aseasonal lowland rain forest in Ecuador, and then compared to the previously determined distribution of trees with EFNs lowland semi-deciduous moist forest in Panama and lowland rain forest in Malaysia. Additionally, I found evidence of a significant effect of EFN presence on individual performance. Trees with EFNs had higher growth but also higher mortality rates than those without EFNs, consistent across all three sites. These results suggest a significant role for extra-floral nectaries and plant defense mechanisms in general for determining forest structure and composition.

Acknowledgements

I would like to thank the Pontificia Universidad Catolica del Ecuador and Yasuni Scientific Research Station for providing logistical support. I also thank Pablo Alvia for aiding in the identification of trees in the Yasuni Forest Dynamics Plot. I thank the Ministerio del Medioambiente of Ecuador for allowing this field work to happen at Yasuni National Park. I thank the Smithsonian Tropical Research Institute for providing demographic data for each plot. The Undergraduate Research Office supported this research through funding (URO Summer Research Fellowship) and other resources.

References

Agrawal, A. A. (2011). Current trends in the evolutionary ecology of plant defence. *Functional Ecology*, 25, 420-432.

Barone, J. A. (2000). Comparison of herbivores and herbivory in the canopy and understory for two tropical tree species. *Biotropica*, 32, 307-317.

Bass, M. S., Finer, M., Jenkins, C. N., Kreft, H., Cisneros-Heredia, D. F., McCracken, S. F., Pitman, N. C. A., English P. H., Swing, K., Villa, G., Di Fiore, A., Voigt, C. C., & Kunz, T. H. (2010). Global conservation significance of Ecuador's Yasuní National Park. *PloS one*, 5, e8767.

Beattie, A. J. (1985). *The Evolutionary Ecology of Ant-Plant Mutualisms*. Cambridge University Press, Cambridge, UK.

Bentley, B. L. (1977a). Extrafloral nectaries and protection by pugnacious bodyguards. *Annual Review of Ecology and Systematics*, 8, 407-27.

Bentley, B. L. (1977b). The protective function of ants visiting the extrafloral nectaries of *Bixa orellana* (Bixaceae). *Journal of Ecology*, 65, 27-38.

Bremer, B., Bremer, K., Chase, M., Fay, M., Reveal, J., Soltis, D., Soltis, P., & Stevens, P. (2009). An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. *Botanical Journal of the Linnean Society*, 161, 105-121.

Brokaw, N. V. (1985). Gap-phase regeneration in a tropical forest. *Ecology*, 66, 682-687.

Chapin III, F. S., Vitousek, P. M., & Van Cleve, K. (1986). The nature of nutrient limitation in plant communities. *American Naturalist*, 127, 48-58.

Chazdon, R. L., & Pearcy, R. W. (1991). The importance of sunflecks for forest understory plants. *BioScience*, 41, 760-766.

Chesson, P. (2000). Mechanisms of maintenance of species diversity. *Annual Review of Ecology and Systematics*, 31, 343-366.

Coley, P. D., & Barone, J. A. (1996). Herbivory and plant defenses in tropical forests. *Annual Review of Ecology and Systematics*, 27, 305-335.

Condit, R. (1998). *Tropical Forest Census Plots: methods and results from Barro Colorado Island, Panama and a comparison with other plots*. Springer Verlag, Berlin.

Condit, R., Ashton, P., Bunyavejchewin, S., Dattaraja, H. S., Davies, S., Esufali, S., Ewango, C., Foster, R., Gunatilleke, I. A. U. N., Gunatilleke, C. V. S., Hall, P., Harms, K. E., Hart, T., Hernandez, C., Hubbell, S., Itoh, A., Kiratiprayoon, S., LaFrankie, J., Loo de Lao, S., Makana, J., Noor, S., Kassim, A. R., Russo, S., Sukumar, R., Samper, C., Suresh, H. S., Tan, S., Thomas, S., Valencia, R., Vallejo, M., Villa, G., & Zillio, T. (2006). The importance of demographic niches to tree diversity. *Science*, 313, 98-101.

Croat, T. B. (1978). *Flora of Barro Colorado Island*. Stanford University Press.

Denslow, J. S. (1980). Gap partitioning among tropical rainforest trees. *Biotropica*, 12, 47-55.

Denslow, J. S., Pickett, S. T. A., & White, P. S. (1985). Disturbance-mediated coexistence of species. Pp 307-323. In: Pickett, S. T. A. *The Ecology of Natural Disturbance and Patch Dynamics*. Academic Press.

Denslow, J. S., Vitousek, P. M., & Schultz, J. C. (1987). Bioassays of nutrient limitation in a tropical rain forest soil. *Oecologia*, 74, 370-376.

Elias, T. S. (1983). Extrafloral nectaries: their structure and distribution. Pp 174-203. In: Bentley, B. L. & Elias, T. S. (Eds) *The Biology of Nectaries*. Columbia University Press.

Feeny, P. (1976). Plant apparency and chemical defense. Pp 1-40. In: Wallace, J. W. (Ed) *Biochemical Interaction Between Plants and Insects*. Plenum Press.

Fiala, B., & Linsenmair, K. E. (1995). Distribution and abundance of plants with extrafloral nectaries in the woody flora of a lowland primary forest in Malaysia. *Biodiversity & Conservation*, 4, 165-182.

Finer, M., Vijay, V., Ponce, F., Jenkins, C. N., & Kahn, T. R. (2009). Ecuador's Yasuní Biosphere Reserve: a brief modern history and conservation challenges. *Environmental Research Letters*, 4, 034005.

Garwood, N. C., & Tebbs, M. C. (2009). *Seedlings of Barro Colorado Island and the Neotropics*. Comstock Pub Assoc.

Gentry, A. H. ed. (1993). *Four Neotropical Rainforests*. Yale University Press. Binghamton, USA.

Hanley, M. E., Lamont, B. B., Fairbanks, M. M., & Rafferty, C. M. (2007). Plant structural traits and their role in anti-herbivore defence. *Perspectives in Plant Ecology, Evolution and Systematics*, 8, 157-178.

Hubbell, S. P. (2001). *The Unified Neutral Theory of Biodiversity and Biogeography*. Princeton University Press, Princeton, USA.

Keeler, K. H. (1977). The extrafloral nectaries of *Ipomoea carnea* (Convolvulaceae). *American Journal of Botany*, 64, 1182-1188.

Keeler, K. H. (1989). Ant-plant interactions. Pp 207-242. In: Abrahamson, W. G., (Ed) *Plant-Animal Interactions*. McGraw-Hill.

Keeler, K. H. (2013). World List of Angiosperm Species with Extrafloral Nectaries. Retrieved from http://bioscilabs.unl.edu/Emeriti/keeler/ extrafloral/worldlistfamilies.htm

Koptur, S. (1992). Extrafloral nectary-mediated interactions between insects and plants. *Insect Plant Interactions*, 4, 81-129.

Leigh Jr, E. G., Loo de Lao, S., Condit, R., Hubbell, S. P., Foster, R. B., & Perez, R. (2004). Barro Colorado island forest dynamics plot, Panama. Pp: 451-463. In: Losos, E. C., & Leigh, E. G. (Eds.). *Tropical Forest Diversity and Dynamism: Findings from a large-scale plot network*. University of Chicago Press.

Levin, D. A., & York Jr, B. M. (1978). The toxicity of plant alkaloids: an ecogeographic perspective. *Biochemical Systematics and Ecology*, 6, 61-76.

Manokaran, N., Seng, Q. E., Ashton, P. S., LaFrankie, J. V., Noor, N. S. M., Ahmad, W. M. S. W., & Okuda, T. (2004). Pasoh forest dynamics plot, Peninsular Malaysia. Pp. 585-598. In: Losos, E. C., & Leigh, E. G. (Eds.). *Tropical Forest Diversity and Dynamism: Findings from a large-scale plot network*. University of Chicago Press.

Novotny, V., Miller, S. E., Baje, L., Balagawi, S., Basset, Y., Cizek, L., Craft, K. J., Dem, F., Drew, R. A., Hulcr, J., Leps, J., Lewis, O. T., Pokon R., Stewart, A. J., Samuelson, G. A., & Weiblen, G. D. (2010). Guild specific patterns of species richness and host specialization in plant–herbivore food webs from a tropical forest. *Journal of Animal Ecology*, 79, 1193-1203.

Oliveira, P. S., & Leitão-Filho, H. F. (1987). Extrafloral nectaries: their taxonomic distribution and abundance in the woody flora of cerrado vegetation in Southeast Brazil. *Biotropica*, 19,140-148.

Oliveira, P. S. (1997). The ecological function of extrafloral nectaries: herbivore deterrence by visiting ants and reproductive output in *Caryocar brasiliense* (Caryocaraceae). *Functional Ecology*, 11, 323-330.

Palmer, M. W. (1994). Variation in species richness: towards a unification of hypotheses. *Folia Geobotanica et Phytotaxonomica*, 29, 511-530.

Pemberton, R. W. (1998). The occurrence and abundance of plants with extrafloral nectaries, the basis for antiherbivore defensive mutualisms, along a latitudinal gradient in east Asia. *Journal of Biogeography*, 25, 661-668.

Schupp, E. W., & Feener, D. H. (1991). Phylogeny, lifeform, and habitat dependence of ant-defended plants in a Panamanian forest. Pp. 175-197. In: Huxley, C. R., and Cutler, D. F. (Eds). *Ant-Plant Interactions*. Oxford University Press, Oxford, UK.

Silvertown, J. (2004). Plant coexistence and the niche. *Trends in Ecology & Evolution*, 19, 605-611.

Valencia, R., Foster, R. B., Villa, G., Condit, R., Sven-

ning, J. C., Hernández, C., Romolerouz, K., Loso, E., Magard, E., & Balslev, H. (2004). Tree species distributions and local habitat variation in the Amazon: large forest plot in eastern Ecuador. *Journal of Ecology*, 92, 214-229.

Weber, M. G., & Keeler, K. H. (2012). The phylogenetic distribution of extrafloral nectaries in plants. *Annals of Botany*, in press.

Wright, J. S. (2002). Plant diversity in tropical forests: a review of mechanisms of species coexistence. *Oecologia*, 130, 1-14.

Appendix 1: List of taxa from Yasuni not previously recorded with EFN

Genus	Species	Family	Order
Lauraceae	miniopacangulo	Lauraceae	Laurales
Abarema	laeta	Fabaceae	Fabales
Alchornea	glandulosa	Euphorbiaceae	Malpighiales
Alchornea	schomburkii_cf.	Euphorbiaceae	Malpighiales
Aparisthmium	cordatum	Euphorbiaceae	Malpighiales
Buchenavia	congesta	Combretaceae	Myrtales
Buchenavia	grandis	Combretaceae	Myrtales
Bunchosia	argentea	Malpighiaceae	Malpighiales
Bunchosia	argentea(granpanosa)	Malpighiaceae	Malpighiales
Caryodendron	orinocense	Euphorbiaceae	Malpighiales
Cedrelinga	catenaeformis	Fabaceae	Fabales
Colubrina	arbol	Rhamnaceae	Rosales
Conceveiba	rhytidocarpa	Euphorbiaceae	Malpighiales
Enterolobium	barnebianum	Fabaceae	Fabales
Glycydendron	amazonicum	Euphorbiaceae	Malpighiales
Hirtella	excelsa	Chrysobalanaceae	Malpighiales
Inga	3crasa	Fabaceae	Fabales
Inga	3oscura	Fabaceae	Fabales
Inga	4alitarco	Fabaceae	Fabales
Inga	6cuadra	Fabaceae	Fabales
Inga	acreana	Fabaceae	Fabales
Inga	alata	Fabaceae	Fabales
Inga	alba	Fabaceae	Fabales
Inga	auristellae	Fabaceae	Fabales
Inga	bourgonii	Fabaceae	Fabales
Inga	brachyrhachis	Fabaceae	Fabales
Inga	cayennensis	Fabaceae	Fabales
Inga	chartacea	Fabaceae	Fabales
Inga	ciliata_ssp.subcapita	Fabaceae	Fabales
Inga	cinnamomea	Fabaceae	Fabales
Inga	cordatoalata	Fabaceae	Fabales
Inga	falsacre	Fabaceae	Fabales
Inga	leiocalycina	Fabaceae	Fabales
Inga	microcoma	Fabaceae	Fabales
Inga	multinervis	Fabaceae	Fabales
Inga	poeppigiana	Fabaceae	Fabales
Inga	rusbyi	Fabaceae	Fabales
Inga	sarayacuensis	Fabaceae	Fabales
Inga	spectabilis	Fabaceae	Fabales
Inga	stellaeglabra	Fabaceae	Fabales
Inga	stipulacea	Fabaceae	Fabales
Inga	striata	Fabaceae	Fabales

Inga	tenuistipula	Fabaceae	Fabales
Inga	thibaudiana	Fabaceae	Fabales
Inga	thibaudiana_ssp.peltadenia	Fabaceae	Fabales
Inga	tocacheana	Fabaceae	Fabales
Inga	umbratica	Fabaceae	Fabales
Inga	velutina	Fabaceae	Fabales
Inga	vismiifolia	Fabaceae	Fabales
Inga	yacoana	Fabaceae	Fabales
Jacaratia	digitata	Caricaceae	Brassicales
Licania	caudata	Chrysobalanaceae	Malpighiales
Licania	longistyla	Chrysobalanaceae	Malpighiales
Licania	nervifina	Chrysobalanaceae	Malpighiales
Marmaroxylon	basijugum	Fabaceae	Fabales
Pausandra	trianae	Euphorbiaceae	Malpighiales
Pourouma	minor	Urticaceae	Rosales
Prunus	debilis	Rosaceae	Rosales
Qualea	paraensis	Vochysiaceae	Myrtales
Sapium	largident	Euphorbiaceae	Malpighiales
Terminalia	ob	Combretaceae	Myrtales
Tetrorchidium	macrophyllum	Euphorbiaceae	Malpighiales
Zygia	heteroneura	Fabaceae	Fabales
Zygia	mediana	Fabaceae	Fabales

Appendix 2: Species list and EFN incidence for each plot

Yasuní				BCI				Pasoh		
Genus	species	EFN	Source	Genus	species	EFN	Source	Genus	species	EFN
(combretaceae)	ovni			Abarema	macradenia	n		Acronychia	porteri	n
(fabaceae)	20-25oblong			Acacia	melanoceras	y	keeler	Actinodaphne	macrophylla	n
(fabaceae)	brillafuzzy	n	Field	Acalypha	diversifolia	n	study	Actinodaphne	pruinosa	n
(fabaceae)	diploglauco			Acalypha	macrostachya	n		Actinodaphne	sesquipedalis	n
(hippocrateaceae)	atenumembra	n	Field	Adelia	triloba	n		Adenanthera	bicolor	n
(hippocrateaceae)	cheiloancho			Aegiphila	panamensis	y	keeler	Aglaia	aspera	n
(hippocrateaceae)	ovalo	n	Field	Alchornea	costaricensis	y	study	Aglaia	cordata	n
(lauraceae)	bals	n	Field	Alchornea	latifolia	y	study	Aglaia	exstipulata	n
(lauraceae)	chiquita	n	Field	Alibertia	edulis	n	study	Aglaia	forbesii	n
(lauraceae)	chorongo			Allophylus	psilospermus	n	study	Aglaia	ganggo	n
(lauraceae)	furrycanela	n	Field	Alseis	blackiana	n	study	Aglaia	glabriflora	n
(lauraceae)	furrymen			Amaioua	corymbosa	n		Aglaia	grandis	n
(lauraceae)	granbrillacuspi	n	Field	Anacardium	excelsum	n	study	Aglaia	meliosmoides	n
(lauraceae)	granverde	n	Field	Anaxagorea	panamensis	n		Aglaia	odoratissima	n
(lauraceae)	impresofalso	n	Field	Andira	inermis	n	study	Aglaia	oligocarpa	n
(lauraceae)	largoarco			Annona	acuminata	n	study	Aglaia	oligophylla	n
(lauraceae)	licar	n	Field	Annona	hayesii	n	study	Aglaia	palembanica	n
(lauraceae)	lisagroovy	n	Field	Annona	spraguei	n	study	Aglaia	ridleyi	n
(lauraceae)	medpubinervi	n	Field	Apeiba	hybrid	n		Aglaia	rubescens	n
(lauraceae)	miniopacangulo	y	Field	Apeiba	membranacea	n	study	Aglaia	rufa	n
(lauraceae)	pelonegro			Apeiba	tibourbou	n	study	Aglaia	species_1	n
(lauraceae)	subopo	n	Field	Aphelandra	sinclairiana	y	keeler	Aglaia	species_2	n
(lauraceae)	tallorojo			Ardisia	bartlettii	n	study	Aglaia	species_3	n
(malpighiaceae)	bulondu			Ardisia	fendleri	n		Aglaia	species_4	n
(malpighiaceae)	granoscura			Ardisia	guianensis	n		Aglaia	species_5	n
(malpighiaceae)	myrtosco			Aspidosperma	spruceanum	n	study	Aglaia	species_7	n
(melastomataceae)	dienteblanca			Astrocaryum	standleyanum	n		Aglaia	tenuicaulis	n
(meliaceae)	alarganervi			Astronium	graveolens	n		Aidia	wallichiana	n
(moraceae)	pequecilio	n	Field	Attalea	butyracea	n		Alangium	ebenaceum	n
(myrtaceae)	cortezapeq	n	Field	Bactris	barronis	n		Alangium	griffithii	n
(myrtaceae)	falsasalas			Bactris	coloniata	n		Alangium	nobile	n
(myrtaceae)	membrapelos			Bactris	coloradonis	n		Alangium	ridleyi	n
(myrtaceae)	platatomen			Bactris	major	n		Albizia	pedicellata	y
(myrtaceae)	prominsuave	n	Field	Banara	guianensis	y	keeler	Alchornea	rugosa	y
(myrtaceae)	smedcheilo			Beilschmiedia	pendula	n	study	Allophylus	cobbe	n
(myrtaceae)	smedcomun	n	Seed	Bertiera	guianensis	n		Alphonsea	elliptica	n
(myrtaceae)	smedhipocrat	n	Field	Borojoa	panamensis	n		Alphonsea	maingayi	n
(myrtaceae)	smedpubicost	n	Field	Brosimum	alicastrum	n	study	Alseodaphne	nigrescens	n
(picramniaceae)	sp.nov.	n	Field	Brosimum	guianense	n		Alseodaphne	peduncularis	n
(rubiaceae)	amarillapub			Calophyllum	longifolium	n	study	Alseodaphne	perakensis	n
(rubiaceae)	ampliovada	n	Fieldh	Capparis	frondosa	n	study	Alseodaphne	species_1	n
(rubiaceae)	neoide			Casearia	aculeata	n		Alseodaphne	species_2	n
(rubiaceae)	renato	n	Field	Casearia	arborea	n	study	Alstonia	angustiloba	n
(rubiaceae)	retidomatia			Casearia	commersoniana	n		Anacolosa	heptandra	n
(rubiaceae)	viveca			Casearia	guianensis	n		Anaxagorea	javanica	n
(rubiaceae)	wilson	n	Field	Casearia	sylvestris	n		Anisophyllea	corneri	n
(sapindaceae)	amarillasper			Cassipourea	elliptica	n	study	Anisoptera	costata	n
(sapindaceae)	rua	n	Field	Cavanillesia	platanifolia	n	study	Anisoptera	laevis	n
(solanaceae)	plata			Cecropia	insignis	n		Anisoptera	megistocarpa	n
Abarema	jupunba	y	Field/Keeler	Cecropia	longipes	n		Antidesma	coriaceum	n
Abarema	laeta	y	Field	Cecropia	obtusifolia	n		Antidesma	cuspidata	n
Abuta	grandifolia	n	Field	Cedrela	odorata	y	study	Antidesma	pendulum	n
Acalypha	cuneata	n	Field	Ceiba	pentandra	y	study	Antidesma	velutinosum	n
Acalypha	pub			Celtis	schippii	n	study	Aphanamixis	polystachya	n
Acalypha	sharpdent			Cespedesia	spathulata	n		Aphanamixis	sumatrana	n
Acalypha	sharpub			Cestrum	megalophyllum	n		Aporusa	aurea	y
Acanthosyris	annonagustata	n	Field	Chamaedorea	tepejilote	n		Aporusa	bracteosa	n
Acidoton	nicaraguensis	n	Field	Chamguava	schippii	n		Aporusa	confusa	n
Aegiphila	cordifolia_var.villos	n	Field	Chimarrhis	parviflora	n		Aporusa	falcifera	n
Aegiphila	elegans			Chrysochlamys	eclipes	n		Aporusa	globifera	n
Aegiphila	haughtii	n	Field	Chrysophyllum	argenteum	n		Aporusa	lunata	n
Aegiphila	integrifolia			Chrysophyllum	cainito	n	study	Aporusa	microstachya	n
Aegiphila	memboscu	n	Field	Cinnamomum	triplinerve	n		Aporusa	miqueliana	n
Agonandra	peruviana	n	Field	Clidemia	dentata	n		Aporusa	nervosa	n
Agonandra	silvatica	n	Field	Clidemia	octona	n		Aporusa	nigricans	n
Aiouea	grandifolia_aff.			Clidemia	septuplinervia	n		Aporusa	nigropunctata	n
Aiouea	sp.nov.	n	Field	Coccoloba	coronata	n	study	Aporusa	prainiana	n
Aiphanes	ulei	n		Coccoloba	manzinellensis	n	study	Aporusa	symplocoides	n
Albizia	niopoides			Cojoba	rufescens	n		Aquilaria	malaccensis	n
Alchornea	glandulosa	y	Field	Colubrina	glandulosa	n		Aralidium	pinnatifidum	n
Alchornea	schomburkii_cf.	y	Field	Conostegia	bracteata	n	study	Archidendron	bubalinum	y
Alchornea	triplinervia	y	Field/Keeler	Conostegia	cinnamomea	n		Archidendron	clypearia	y
Alchorneopsis	floribunda	y	Keeler	Cordia	alliodora	n		Archidendron	contortum	y
Alibertia	isernii	n	Field	Cordia	bicolor	n	study	Archidendron	globosum	y
Alibertia	jorge			Cordia	lasiocalyx	n	study	Archidendron	microcarpum	y
Alibertia	lance	n	Field	Coussarea	curvigemmia	n	study	Ardisia	colorata	n
Alibertia	pelitos	n	Field	Coutarea	hexandra	n		Ardisia	crassa	n
Alibertia	pilosa			Croton	billbergianus	y	study	Ardisia	kunstleri	n
Allophylus	amazonicus	n	Field	Cupania	cinerea	n		Ardisia	lanceolata	n
Allophylus	divaricatus	n	Field	Cupania	latifolia	n		Ardisia	pachysandra	n
Allophylus	glabra	n	Field	Cupania	rufescens	n	study	Ardisia	ridleyi	n
Allophylus	pilosus	n	Field	Cupania	seemannii	n		Ardisia	species_2	n
Allophylus	puctatus			Cyathea	petiolata	n		Aromadendron	elegans	n
Alseis	lugonis			Dendropanax	arboreus	n	study	Arthrophyllum	diversifolium	n

Alseis	lugonis_cf.	n	Field	Desmopsis	panamensis	n	study	Artocarpus	anisophyllus	n
Alsophila	cuspidata			Diospyros	artanthifolia	y	study	Artocarpus	dadak	n
Ampelocera	edentula	n	Field	Dipteryx	oleifera	n		Artocarpus	fulvicortex	n
Ampelocera	longissima	n	Field	Drypetes	standleyi	n	study	Artocarpus	integer	n
Amyris	macrocarpa	n	Field	Elaeis	oleifera	n		Artocarpus	kemando	n
Anaxagorea	brevipes			Enterolobium	schomburgkii	y	keeler	Artocarpus	lowii	n
Andira	inermis	n	Field	Erythrina	costaricensis	n	study	Artocarpus	maingayi	n
Andira	macrothyrsa			Erythroxylum	macrophyllum	n		Artocarpus	nitidus_var.griffithii	n
Andira	multistipula			Erythroxylum	panamense	n	study	Artocarpus	rigida	n
Andira	sp.nov.	n	Field	Eugenia	coloradoensis	n	study	Artocarpus	scortechinii	n
Aniba	angulopepper	n	Field	Eugenia	galalonensis	n		Atuna	elata	n
Aniba	guianensis	n	Field	Eugenia	nesiotica	n		Atuna	excelsa	n
Aniba	hostmanniana	n	Field	Eugenia	oerstediana	n	study	Austrobuxus	nitidus	n
Aniba	riparia	n	Field	Faramea	occidentalis	n	study	Baccaurea	griffithii	n
Aniba	taubertiana			Ficus	bullenei	n		Baccaurea	kunstleri	n
Annona	ambotay_aff.	n	Field	Ficus	citrifolia	n		Baccaurea	maingayi	n
Annona	duckei	n	Field	Ficus	colubrinae	n		Baccaurea	minor	n
Annona	mosaic			Ficus	costaricana	n		Baccaurea	parviflora	n
Anthodiscus	amazonicus	n	Field	Ficus	insipida	n	study	Baccaurea	pyriformis	n
Aparisthmium	cordatum	y	Field	Ficus	maxima	n		Baccaurea	racemosa	n
Apeiba	membranacea	n	Field	Ficus	obtusifolia	n		Baccaurea	ramiflora	y
Apeiba	tibourbou			Ficus	pertusa	n		Baccaurea	reticulata	n
Aphelandra	crispata	n	Field	Ficus	popenoei	n		Baccaurea	species_1	n
Aptandra	tubicina			Ficus	tonduzii	n		Baccaurea	sumatrana	y
Apuleia	leiocacarpa	n	Field	Ficus	trigonata	n		Barringtonia	fusiformis	n
Ardisia	densapunta	n	Field	Ficus	yoponensis	n		Barringtonia	macrostachya	n
Ardisia	semibulada	n	Field	Garcinia	intermedia	n		Barringtonia	pendula	n
Aspidosperma	blancimpreso	n	Field	Garcinia	madruno	n		Beilschmiedia	dictyoneura	n
Aspidosperma	megalocarpum	n	Field	Genipa	americana	n		Beilschmiedia	kunstleri	n
Aspidosperma	rigidum			Geonoma	interrupta	n		Beilschmiedia	lucidula	n
Aspidosperma	spruceanum			Guapira	standleyana	n		Beilschmiedia	madang	n
Astrocaryum	chambira	n		Guarea	fuzzy	n		Beilschmiedia	palembanica	n
Astrocaryum	murumuru	n		Guarea	grandifolia	n		Beilschmiedia	species_1	n
Astronium	graveolens	n	Field	Guarea	guidonia	n		Beilschmiedia	species_2	n
Attalea	maripa	n		Guatteria	dumetorum	n	study	Bhesa	paniculata	n
Bactris	corossilla	n		Guazuma	ulmifolia	n	study	Blumeodendron	calophyllum	y
Bactris	marajas_sp.juruensis	n		Guettarda	foliacea	n		Blumeodendron	subrotundifolium	n
Bactris	marajas_sp.maraja	n		Gustavia	superba	y	study	Blumeodendron	tokbrai	n
Bactris	simplicifrons	n		Hamelia	axillaris	n		Bouea	macrophylla	n
Banara	nitida			Hamelia	patens	y	keeler	Bouea	oppositifolia	n
Batocarpus	amazonica	n	Field	Hampea	appendiculata	y	study	Brackenridgea	hookeri	n
Batocarpus	costaricensis	n	Field	Hasseltia	floribunda	y	study	Bridelia	pustulata	n
Batocarpus	orinocensis	n	Field	Heisteria	acuminata	n		Buchanania	sessilifolia	n
Bauhinia	brachycalyx	n	Field	Heisteria	concinna	n	study	Callicarpa	maingayi	n
Bauhinia	lisagroovy			Herrania	purpurea	n	study	Calophyllum	depressinervosum	n
Beilschmiedia	pendula			Hieronyma	alchorneoides	n		Calophyllum	dioscurii	n
Bellucia	pentamera	n	Field	Hirtella	americana	y	study	Calophyllum	macrocarpum	n
Bertiera	guianensis	n	Field	Hirtella	triandra	y	study	Calophyllum	rupicola	n
Besleria	quadrangulata	n	Field	Hura	crepitans	y	study	Calophyllum	soulattri	n
Besleria	stricta	n	Field	Hybanthus	prunifolius	n	study	Calophyllum	tetrapterum	n
Blakea	puberula			Inga	acuminata	y	keeler	Calophyllum	wallichianum	n
Blakea	rosea	n	Field	Inga	cocleensis	y	keeler	Calophyllum	wallichianum_var.incrassatum	n
Borojoa	axiglab	n	Field	Inga	goldmanii	y	keeler	Campnosperma	auriculata	n
Borojoa	claviflora	n	Field	Inga	laurina	y	keeler	Canarium	apertum	n
Brosimum	acutifolium	n	Field	Inga	marginata	y	study	Canarium	littorale_var.littorale	n
Brosimum	guianense	n	Field	Inga	mucuna	y	keeler	Canarium	littorale_var.purpurescens	n
Brosimum	lactescens	n	Field	Inga	nobilis	y	keeler	Canarium	littorale_var.rufum	n
Brosimum	potabile			Inga	oerstediana	y	keeler	Canarium	littorale_var.tomentosum	n
Brosimum	utile	n	Field	Inga	pezizifera	y	keeler	Canarium	megalanthum	n
Brownea	grandiceps	y	Keeler	Inga	punctata	y	keeler	Canarium	patentinervium	n
Brownea	rosada			Inga	ruiziana	y	keeler	Canarium	pilosum	n
Brownea	sp.nov.	n	Field	Inga	sapindoides	y	study	Carallia	brachiata	n
Brunfelsia	chiricaspi			Inga	spectabilis	y	study	Caryota	mitis	n
Buchenavia	congesta	y	Field	Inga	thibaudiana	y	keeler	Casearia	clarkei	n
Buchenavia	grandis	y	Field	Inga	umbellifera	y	keeler	Casearia	species_2	n
Buchenavia	macrophylla			Jacaranda	copaia	y	study	Cassia	nodosa	n
Buchenavia	parvifolia	n	Field	Koanophyllon	wetmorei	n		Castanopsis	curtisii	n
Buchenavia	punctata			Lacistema	aggregatum	n	study	Castanopsis	inermis	n
Bunchosia	argentea	y	Field	Lacmellea	panamensis	n	study	Castanopsis	megacarpa	n
Bunchosia	argentea(granpanosa)	y	Field	Laetia	procera	n		Castanopsis	nephelioides	n
Bunchosia	blanquita			Laetia	thamnia	n	study	Castanopsis	schefferiana	n
Bunchosia	myrt	n	Field	Lafoensia	punicifolia	n		Celtis	rigescens	n
Byrsonima	juanito			Leandra	dichotoma	n		Champereia	manillana	n
Byrsonima	putumayensis	n	Field	Licania	hypoleuca	n		Chasalia	longifolia	n
Cabralea	canjerana	n	Field	Licania	platypus	y	study	Chassalia	curviflora	n
Calliandra	carbonaria	n	Field	Lindackeria	laurina	n	study	Cheilosa	malayana	n
Calophyllum	brasiliense	n	Field	Lonchocarpus	heptaphyllus	n		Chionanthus	callophylla	n
Calycophyllum	megistocaulum	n	Field	Lozania	pittieri	n		Chionanthus	macrocarpa	n
Calyptranthes	bipennis	n	Field	Luehea	seemannii	n	study	Chionanthus	ramiflorus	n
Calyptranthes	gigante			Lycianthes	maxonii	n		Chionanthus	species_1	n
Calyptranthes	grancauli			Maclura	tinctoria	n		Chisocheton	ceramicus	n
Calyptranthes	graneschweil			Macrocnemum	roseum	n	study	Chisocheton	erythrocarpus	n
Calyptranthes	loraine	n	Field	Malpighia	romeroana	y	keeler	Chisocheton	glomeratus	n
Calyptranthes	pelopalida	n	Field	Maquira	guianensis	n	study	Chisocheton	patens	n
Calyptranthes	plicata	n	Field	Margaritaria	nobilis	n	study	Chisocheton	sarawakanus	n
Calyptranthes	pseudospeciosa			Marila	laxiflora	n		Chisocheton	tomentosus	n
Calyptranthes	punctote	n	Field	Maytenus	schippii	n	study	Chrysophyllum	lanceolatum	n
Calyptranthes	punteada			Miconia	affinis	n		Cinnamomum	iners	n
Calyptranthes	ruiziana	n	Field	Miconia	argentea	n	study	Cinnamomum	javanicum	n
Calyptranthes	sedosa	n	Field	Miconia	dorsiloba	n		Cinnamomum	mollissimum	n
Calyptranthes	speciosa	n	Field	Miconia	elata	n		Cinnamomum	porrectum	n

Campomanesia	lineatifolia	n	Field	Miconia	hondurensis	n		Cinnamomum	sintoc	n
Capirona	decorticans	n	Field	Miconia	impetiolaris	n	study	Cleistanthus	maingayi	n
Capparis	detonsa	n	Field	Miconia	nervosa	n		Cleistanthus	malaccensis	n
Capparis	osmantha	n	Field	Miconia	prasina	n	study	Cleistanthus	myrianthus	n
Capparis	sola	n	Field	Mosannona	garwoodii	n		Cleistanthus	sumatranus	n
Caraipa	myricoides_aff.	n	Field	Mouriri	myrtilloides	n	study	Clerodendrum	deflexum	n
Carica	brillante			Myrcia	gatunensis	n	study	Clerodendrum	laevifolium	n
Carica	microcarpa	n	Field	Myrospermum	frutescens	n		Clerodendrum	nutans	n
Carpotroche	longifolia	n	Field	Nectandra	cissiflora	n		Coelostegia	griffithii	n
Caryocar	glabrum	n	Field	Nectandra	fuzzy	n		Crateva	religiosa	n
Caryodaphnopsis	chica	n	Field	Nectandra	lineata	n		Cratoxylum	arborescens	n
Caryodaphnopsis	fosteri			Nectandra	purpurea	n	study	Cratoxylum	cochinchinense	n
Caryodaphnopsis	tomentosa	n	Field	Nectandra	sp.4_(tiny_leaf)	n		Cratoxylum	formosum	n
Caryodendron	orinocense	y	Field	Neea	amplifolia	n	study	Cratoxylum	maingayi	n
Casearia	aculeata	n	Field	Ochroma	pyramidale	y	study	Croton	argyratus	y
Casearia	arborea	n	Field	Ocotea	cernua	n		Croton	laevifolius	y
Casearia	argut			Ocotea	oblonga	n		Crudia	curtisii	n
Casearia	bracteifera	n	Field	Ocotea	puberula	n		Crypteronia	griffithii	n
Casearia	javitensis	n	Field	Ocotea	whitei	n	study	Cryptocarya	ferrea	n
Casearia	nigricans	n	Field	Oenocarpus	mapora	n		Cryptocarya	griffithiana	n
Casearia	pitumba	n	Field	Ormosia	amazonica	n		Cryptocarya	infectoria	n
Casearia	prunicerob	n	Field	Ormosia	coccinea	n		Cryptocarya	kurzii	n
Casearia	prunifolia	n	Field	Ormosia	macrocalyx	n		Cryptocarya	rugulosa	n
Casearia	sp.nov.			Ouratea	lucens	y	study	Cryptocarya	scortechinii	n
Casearia	sylvepub	n	Field	Pachira	quinata	n		Ctenolophon	parvifolius	n
Casearia	sylvestris	n	Field	Pachira	sessilis	n		Cyathocalyx	pruniferus	n
Casearia	ulmifolia	n	Field	Palicourea	guianensis	n	study	Cyathocalyx	ramuliflorus	n
Cassia	cowanii	n	Field	Pavonia	dasypetala	n		Cynometra	malaccensis	n
Castilla	ulei	n	Field	Pentagonia	macrophylla	n	study	Dacryodes	costata	n
Cathedra	acuminata	n	Field	Perebea	xanthochyma	n		Dacryodes	incurvata	n
Cecropia	acer			Picramnia	latifolia	y	keeler	Dacryodes	laxa	n
Cecropia	engleriana	n	Field	Piper	aequale	n	study	Dacryodes	longifolia	n
Cecropia	ficifolia	n	Field	Piper	arboreum	n		Dacryodes	nervosa	n
Cecropia	herthae			Piper	colonense	n		Dacryodes	puberula	n
Cecropia	marginalis			Piper	cordulatum	n	study	Dacryodes	rostrata	n
Cecropia	membranacea			Piper	imperialis	n		Dacryodes	rubiginosa	n
Cecropia	putumayonis			Piper	perlasense	n		Dacryodes	rugosa	n
Cecropia	sciadophylla	n	Field	Piper	reticulatum	n		Decaspermum	fruticosum	n
Cedrela	fissilis	n	Field	Piper	schiedeanum	n		Dehaasia	cuneata	n
Cedrela	odorata	y	Keeler	Platymiscium	pinnatum	n		Dehaasia	incrassata	n
Cedrelinga	catenaeformis	y	Field	Platypodium	elegans	n	study	Dehaasia	longipetiolata	n
Ceiba	pentandra	y	Keeler	Posoqueria	latifolia	n	study	Dehaasia	polyneura	n
Celtis	schippii	n	Seed/Field	Poulsenia	armata	n	study	Deplanchea	bancana	y
Centropogon	loretensis			Pourouma	bicolor	n	study	Dialium	maingayi	n
Cestrum	megalophyllum	n	Field	Pouteria	fossicola	n		Dialium	platysepalum	n
Cestrum	silvaticum	n	Field	Pouteria	reticulata	n	study	Dialium	procerum	n
Cestrum	tomentosum			Pouteria	stipitata	n		Dialium	wallichii	n
Chamaedorea	pauciflora	n		Prioria	copaifera	n	study	Dichapetalum	gelonioides	n
Chamaedorea	pinnatifrons	n		Protium	confusum	n		Dillenia	grandifolia	n
Cheiloclinium	cognatum	n	Seed/Field	Protium	costaricense	n		Dillenia	reticulata	n
Chimarrhis	glabriflora			Protium	panamense	n	study	Dillenia	sumatrana	n
Chimarrhis	jacob	n	Field	Protium	tenuifolium	n	study	Diospyros	adenophora	y
Chionanthus	opipulv	n	Field	Pseudobombax	septenatum	y	study	Diospyros	andamanica	y
Chlorocardium	2subopo			Psidium	friedrichsthalianum	n		Diospyros	apiculata	y
Chomelia	comun	n	Field	Psychotria	acuminata	n		Diospyros	areolata	n
Chrysochlamys	fragil			Psychotria	brachiata	n		Diospyros	argentea	y
Chrysochlamys	hugo	n	Field	Psychotria	chagrensis	n		Diospyros	buxifolia	y
Chrysochlamys	membranacea_cf.	n	Field	Psychotria	deflexa	n	study	Diospyros	cauliflora	n
Chrysochlamys	tenuifolia			Psychotria	graciliflora	n		Diospyros	demona	n
Chrysophyllum	amazonicum	n	Field	Psychotria	grandis	n		Diospyros	diepenhorstii	y
Chrysophyllum	argenteum_ssp.argente	n	Field	Psychotria	hoffmannseggiana	n		Diospyros	lancifolia	n
Chrysophyllum	baeo			Psychotria	horizontalis	n	study	Diospyros	latisepala	n
Chrysophyllum	cuneifolium	n	Field	Psychotria	limonensis	n		Diospyros	maingayi	n
Chrysophyllum	manaosense	n	Field	Psychotria	marginata	n		Diospyros	nutans	y
Chrysophyllum	minor			Psychotria	pittieri	n		Diospyros	penangiana	n
Chrysophyllum	ovale	n	Field	Psychotria	psychotriifolia	n		Diospyros	pendula	y
Chrysophyllum	tremi	n	Field	Psychotria	racemosa	n		Diospyros	pyrrhocarpa	y
Chrysophyllum	venezuelanense			Psychotria	tenuifolia	n		Diospyros	rufa	n
Cinnamomum	napoense	n	Field	Pterocarpus	belizensis	n		Diospyros	scortechinii	y
Cinnamomum	oppretic	n	Field	Pterocarpus	rohrii	n	study	Diospyros	singaporensis	n
Cinnamomum	peloimpreso			Quararibea	asterolepis	n	study	Diospyros	species_1	n
Cinnamomum	triplinerve	n	Field	Quassia	amara	y	study	Diospyros	sumatrana	n
Citharexylum	poeppigii			Randia	armata	n		Diospyros	venosa	n
Clarisia	biflora	n	Field	Rauvolfia	littoralis	n		Diospyros	wallichii	y
Clarisia	racemosa	n	Field	Rinorea	sylvatica	n	study	Diplospora	lasiantha	n
Clavija	delgada			Rosenbergiodendron	formosum	n		Diplospora	malaccense	n
Clavija	procera	n	Field	Sapium	broadleaf	n		Dipterocarpus	cornutus	n
Clavija	weberbaueri	n	Field	Sapium	glandulosum	n		Dipterocarpus	costulatus	n
Clidemia	dimorphica	n	Field	Schefflera	morototoni	n		Dipterocarpus	crinitus	n
Coccoloba	cordi	n	Field	Schizolobium	parahyba	n		Dipterocarpus	kunstleri	n
Coccoloba	densifrons	n	Field	Senna	dariensis	y	keeler	Dipterocarpus	sublamellatus	n
Coccoloba	gigante	n	Field	Simarouba	amara	y	study	Dracaena	brachystachys	n
Coccoloba	jill			Siparuna	guianensis	n		Dracaena	elliptica	n
Coccoloba	lancifuzz	n	Field	Siparuna	pauciflora	n	study	Dracaena	tetrastachys	n
Coccoloba	mollis			Sloanea	terniflora	n		Dracontomelon	dao	n
Coccoloba	ninfi	n	Field	Socratea	exorrhiza	n		Drimycarpus	luridus	n
Coccoloba	papel	n	Field	Solanum	arboreum	n		Drypetes	kikir	n
Coccoloba	puntoblanco	n	Field	Solanum	asperum	n		Drypetes	laevis	n
Coccoloba	puntonegro	n	Field	Solanum	circinatum	n		Drypetes	longifolia	n
Coccoloba	subscab			Solanum	hayesii	n	study	Drypetes	microphylla	n
Colubrina	arbol	y	Field	Solanum	steyermarkii	n		Drypetes	pendula	n

Compsoneura	capitellata	n	Field	Sorocea	affinis	n	study	Drypetes	polyneura	n
Compsoneura	ulei	n	Field	Spachea	membranacea	y	keeler	Drypetes	rhakodiskos	n
Conceveiba	rhytidocarpa	y	Field	Spondias	mombin	n	study	Drypetes	species_1	n
Cordia	buladent			Spondias	radlkoferi	n	study	Durio	griffithii	n
Cordia	chamissoniana	n	Field	Stemmadenia	grandiflora	n		Durio	oxleyanus	n
Cordia	collococca	n	Field	Sterculia	apetala	n	study	Durio	singaporensis	n
Cordia	hebeclada	n	Field	Stylogyne	turbacensis	n		Dyera	costulata	n
Cordia	joli			Swartzia	simplex_var.grandiflora	n	study	Dysoxylum	acutangulum	n
Cordia	kingstonina	n	Field	Swartzia	simplex_var.ochnacea	n	study	Dysoxylum	alliaceum	n
Cordia	nodosa	n	Field	Symphonia	globulifera	n	study	Dysoxylum	carolinae	n
Cordia	ucayalensis	n	Field	Tabebuia	guayacan	n		Dysoxylum	cauliflorum	n
Costus	chica			Tabebuia	rosea	y	study	Dysoxylum	costulatum	n
Costus	gigante			Tabernaemontana	arborea	n	study	Dysoxylum	flavescens	n
Costus	glabra			Tachigali	versicolor	n	study	Dysoxylum	species_1	n
Costus	hairy			Talisia	nervosa	n	study	Ehretia	timorensis	n
Costus	mediana			Talisia	princeps	n	study	Elaeocarpus	ferrugineus	n
Costus	pablo			Terminalia	amazonia	y	study	Elaeocarpus	griffithii	n
Couepia	obovata	n	Field	Terminalia	oblonga	n		Elaeocarpus	nitidus	n
Couepia	parillo	n	Field	Ternstroemia	tepezapote	n		Elaeocarpus	palembanicus	n
Couratari	guianensis	n	Field	Tetragastris	panamensis	n	study	Elaeocarpus	petiolatus	n
Couroupita	guianensis	n	Field	Tetrathylacium	johansenii	n		Elaeocarpus	rugosus	n
Coussapoa	orthoneura	n	Field	Theobroma	cacao	n		Elaeocarpus	stipularis	n
Coussarea	brevi	n	Field	Thevetia	ahouai	n	study	Elateriospermum	tapos	y
Coussarea	cephaeloide	n	Field	Tocoyena	pittieri	n		Endiandra	kingiana	n
Coussarea	dulcifolia	n	Field	Trattinnickia	aspera	n	study	Endiandra	maingayi	n
Coussarea	klugii	n	Field	Trema	micrantha	n	study	Endocomia	canarioides	n
Coussarea	multiflora			Trichanthera	gigantea	n		Endospermum	malaccense	y
Cremastosperma	cauliflorum	n	Field	Trichilia	pallida	n		Engelhardtia	serrata	n
Cremastosperma	gracilipes	n	Field	Trichilia	tuberculata	n		Enicosanthum	fuscum	n
Crepidospermum	goudotianum	n	Field	Trichospermum	galeottii	n	study	Epiprinus	malayanus	y
Crepidospermum	rhoifolium	n	Field	Triplaris	cumingiana	n		Erycibe	albida	n
Cryptocarya	aschersoniana_cf.	n	Field	Trophis	caucana	n		Erythroxylum	cuneatum	n
Cuatresia	glabra	n	Field	Trophis	racemosa	n		Eugenia	castanea	n
Cupania	cinerea	n	Field	Turpinia	occidentalis	n		Eugenia	ceraina	n
Cupania	livida	n	Seed/Field	Unonopsis	pittieri	n		Eugenia	cerasiformis	n
Cupania	verde			Urera	baccifera	n	study	Eugenia	chlorantha	n
Cyathea	lasiosora	n	Field	Verbesina	gigantea	n		Eugenia	claviflora	n
Cyathea	pungens	n	Field	Virola	multiflora	n		Eugenia	cumingiana	n
Cybianthus	perseon	n	Field	Virola	sebifera	n	study	Eugenia	densiflora	n
Cymbopetalum	coriaceum	n	Field	Virola	surinamensis	n	study	Eugenia	duthieana	n
Cyphomandra	glabra	n	Field	Vismia	baccifera	n		Eugenia	dyeriana	n
Cyphomandra	membra			Vismia	billbergiana	n		Eugenia	fastigiata	n
Cyphomandra	pilosa			Vismia	macrophylla	n		Eugenia	filiformis	n
Dacryodes	gorda	n	Field	Vochysia	ferruginea	n	study	Eugenia	flosculifera	n
Dacryodes	peruviana	n	Field	Xylopia	macrantha	n	study	Eugenia	glauca_var.pseudoglauca	n
Dalbergia	nigrescens_cf.	n	Field	Xylosma	chlorantha	n		Eugenia	griffithii	n
Dendrobangia	boliviana	n	Field	Xylosma	oligandra	n		Eugenia	inophylla	n
Dendropanax	arboreus	n	Field	Zanthoxylum	acuminatum	n		Eugenia	inophylla_var.barnardi	n
Dendropanax	caucanus_cf.	n	Field	Zanthoxylum	ekmanii	n		Eugenia	koordersiana	n
Dendropanax	caucanus_cf.(grande)			Zanthoxylum	panamense	y	study	Eugenia	leptostemon	n
Dendropanax	querceti	n	Field	Zanthoxylum	setulosum	y	study	Eugenia	napiformis	n
Dialium	guianense	n	Field	Zuelania	guidonia	n	study	Eugenia	nigricans	n
Dilkea	parviflora	n	Field					Eugenia	oblongifolia	n
Dilkea	pasillo							Eugenia	pachyphylla	n
Diospyros	artanthifolia	y	Keeler					Eugenia	polita	n
Diospyros	crapeifolia							Eugenia	polyantha	n
Diospyros	ekodul							Eugenia	prainiana	n
Diospyros	pseudoxylopia	n	Field					Eugenia	pseudocrenulata	n
Diospyros	subrotata	n	Field					Eugenia	pseudosubtilis	n
Diploon	cuspidatum							Eugenia	pustulata	n
Diplotropis	pterochic	n	Field					Eugenia	ridleyi	n
Diplotropis	purpurea_cf.	n	Field					Eugenia	rugosa	n
Discophora	guianensis	n	Field					Eugenia	scortechinii	n
Dracontium	longipes							Eugenia	species_10	n
Drypetes	amazonica	n	Field					Eugenia	species_16	n
Drypetes	papilosa							Eugenia	species_4	n
Drypetes	variabilis	n	Field					Eugenia	species_8	n
Duguetia	cortaten	n	Field					Eugenia	species_a	n
Duguetia	hadrantha	n	Field					Eugenia	species_b	n
Duguetia	quitarensis	n	Field					Eugenia	species_d	n
Duguetia	spixiana	n	Field					Eugenia	spicata	n
Duguetia	surinamensis							Eugenia	subdecussata	n
Dulacia	candida	n	Field					Eugenia	syzygioides	n
Duroia	eriopila	n	Field					Eugenia	tumida	n
Duroia	hirsuta	n	Field					Eugenia	valdevenosa	n
Dussia	delgada	n	Fieldl					Eugenia	variolosa	n
Dussia	pelosblancos							Eugenia	virens	n
Dussia	tessmannii							Euodia	glabra	n
Ecclinusa	angostaestipul	n	Field					Euodia	roxburghiana	n
Ecclinusa	guianensis	n	Field					Euonymus	javanicus	n
Elaeoluma	glabrescens							Eurycoma	longifolia	n
Endlicheria	bracteata	n	Field					Fagraea	racemosa	n
Endlicheria	burbujas	n	Field					Fahrenheitia	pendula	y
Endlicheria	canescens							Ficus	chartacea	n
Endlicheria	falsadyso	n	Field					Ficus	fistulosa	n
Endlicheria	formosa	n	Field					Ficus	fulva	n
Endlicheria	formosa	n	Field					Ficus	glandulifera	n
Endlicheria	krukovii							Ficus	grossularioides	n
Endlicheria	metalica	n	Field					Ficus	lamponga	n
Endlicheria	sericea							Ficus	obscura	y
Endlicheria	sericea_aff.	n	Field					Ficus	schwarzii	n

Endlicheria	sp.nov.	n	Field
Endlicheria	taubertiana		
Endlicheria	tessmannii	n	Field
Endlicheria	tschudyana	n	Seed/Field
Enterolobium	barnebianum	y	Field
Eriotheca	globosa		
Erisma	uncinatum		
Erythrina	amazonica	n	Field
Erythrochiton	margot		
Erythroxylum	gracilipes	n	Field
Erythroxylum	macrophyllum_var.ecuadorense	n	Field
Erythroxylum	macrophyllum_var.macr	n	Field
Erythroxylum	squamatum		
Eschweilera	andina	n	Field
Eschweilera	bracteosa	n	Field
Eschweilera	coriacea	n	Field
Eschweilera	giga	n	Field
Eschweilera	gigandin	n	Field
Eschweilera	gigantea	n	Field
Eschweilera	gigarco	n	Field
Eschweilera	juruensis		
Eschweilera	rufifolia	n	Seed/Field
Esenbeckia	amazonica	n	Field
Esenbeckia	lisa		
Eugenia	coffeifolia_aff.		
Eugenia	deltocrespis_aff.	n	Field
Eugenia	egensis		
Eugenia	feijoi	n	Field
Eugenia	florida	n	Field
Eugenia	graneschweil	n	Field
Eugenia	granvariable	n	Field
Eugenia	lambertiana	n	Seed
Eugenia	leo		
Eugenia	macrocalyx	n	Field
Eugenia	margot	n	Field
Eugenia	membranegra	n	Field
Eugenia	mimus_aff._rojo	n	Field
Eugenia	mimus_aff._verde	n	Field
Eugenia	minicomun	n	Field
Eugenia	multirimosa	n	Field
Eugenia	myrobalana_aff.	n	Field
Eugenia	panosadorada	n	Field
Eugenia	puntote		
Eugenia	ramamarilla	n	Field
Eugenia	schunkei	n	Field
Eugenia	smedcomun	n	Field
Eugenia	smedcostacrasa	n	Field
Eugenia	smedcostadorada	n	Field
Euplassa	occidentalis_cf.	n	Field
Euterpe	precatoria	n	
Exostema	maynense	n	Field
Faramea	capillipes	n	Field
Faramea	crassa	n	Field
Faramea	glandulosa	n	Field
Faramea	multiflora	n	Field
Faramea	quinqueflora	n	Field
Faramea	torquata	n	Field
Faramea	uncinata	n	Field
Faramea	vaina		
Ficus	bajio	n	
Ficus	brevibracteata	n	
Ficus	casapi	n	
Ficus	gomelleira	n	
Ficus	maxima	n	
Ficus	minimax	n	
Ficus	nymphaeifolia_cf.	n	Field
Ficus	oveja	n	
Ficus	perez-arbelaezii	n	
Ficus	piresiana	n	
Ficus	tonduzii	n	
Ficus	trigona	n	
Ficus	trigonata_cf.	n	
Ficus	trigonhirsuta	n	
Ficus	ursina	n	
Froesia	diffusa	n	Field
Garcinia	brasiliensis	n	Field
Garcinia	macrophylla		
Garcinia	madruno	n	Field
Gen.nov.	subopo	n	Field
Genipa	americana		
Geonoma	aspidifolia_cf.	n	
Geonoma	maxima	n	
Geonoma	stricta_var.piscicauda	n	
Geonoma	stricta_var.stricta	n	
Geonoma	triglochin	n	
Gloeospermum	equatoriense	n	Field
Gloeospermum	longifolium	n	Field
Gloeospermum	sphaerocarpum_cf.		
Glycydendron	amazonicum	y	Field
Gordonia	fruticosa		
Grias	neuberthii	n	Field
Ficus	scortechinii	n	
Ficus	sinuaata	n	
Ficus	variegata	n	
Ficus	vasculosa	n	
Flacourtia	rukam	n	
Gaertnera	oblanceolata	n	
Galearia	fulva	n	
Galearia	maingayi	n	
Ganua	mottleyana	n	
Ganua	species_1	n	
Garcinia	atroviridis	n	
Garcinia	bancana	n	
Garcinia	eugenifolia	n	
Garcinia	forbesii	n	
Garcinia	griffithii	n	
Garcinia	malaccensis	n	
Garcinia	nervosa	n	
Garcinia	nigrolineata	n	
Garcinia	parvifolia	n	
Garcinia	prainiana	n	
Garcinia	pyrifera	n	
Garcinia	rostrata	n	
Garcinia	scortechinii	n	
Garcinia	species_1	n	
Garcinia	species_2	n	
Garcinia	species_4	n	
Garcinia	species_5	n	
Gardenia	tubifera	n	
Gardeniopsis	longifolia	n	
Gironniera	nervosa	n	
Gironniera	parvifolia	n	
Gironniera	subaequalis	n	
Glochidion	hypoleucum	n	
Glochidion	obscurum	n	
Glochidion	sericeum	n	
Glochidion	species_1	n	
Glochidion	superbum	n	
Glochidion	wallichianum	n	
Gluta	malayana	n	
Glycosmis	chlorosperma	n	
Glycosmis	sapindoides	n	
Glyptopetalum	quadrangulare	n	
Gnetum	gnemon	n	
Gomphandra	capitulata	n	
Gomphandra	quadrifida	n	
Gomphandra	species_1	n	
Gomphia	serrata	n	
Goniothalamus	macrophyllus	n	
Goniothalamus	tortilipetalus	n	
Gonocaryum	gracile	n	
Gonystylus	maingayi	n	
Gordonia	singaporiana	n	
Grewia	antidesmaefolia	n	
Grewia	blattifolia	n	
Grewia	fibrocarpa	n	
Grewia	laurifolia	n	
Grewia	miqueliana	n	
Guioa	species_1	n	
Gymnacranthera	eugeniifolia	n	
Gymnacranthera	forbesii	n	
Gynotroches	axillaris	n	
Harmandia	kunstleri	n	
Harpullia	cupanioides	n	
Hedyotis	species	n	
Helicia	attenuata	n	
Heliciopsis	velutina	n	
Heritiera	elata	n	
Heritiera	javanica	n	
Heritiera	simplicifolia	n	
Homalium	caryophyllaceum	y	
Homalium	dictyoneurum	y	
Homalium	longifolium	y	
Hopea	dryobalanoides	n	
Hopea	mengarawan	y	
Hopea	sangal	n	
Horsfieldia	brachiata	n	
Horsfieldia	crassifolia	n	
Horsfieldia	flocculosa	n	
Horsfieldia	fulva	n	
Horsfieldia	polyspherula	n	
Horsfieldia	polyspherula_var.sumatrana	n	
Horsfieldia	punctatifolia	n	
Horsfieldia	sucosa	n	
Horsfieldia	superba	n	
Horsfieldia	tomentosa	n	
Horsfieldia	wallichii	n	
Hunteria	zeylanica	n	
Hypobathrium	venulosum	n	
Hypobathrum	racemosum	n	
Iguanura	wallichiana	n	
Ilex	macrophylla	n	

Guapira	clasica	n	Field
Guapira	granclasica		
Guarea	carinata	n	Field
Guarea	ecuadoriensis		
Guarea	falsakunth	n	Field
Guarea	fistulosa	n	Field
Guarea	gigakunth	n	Field
Guarea	glabra	y	Keeler
Guarea	gomma	n	Field
Guarea	grandifolia	n	Seed/Field
Guarea	guentheri	n	Seed
Guarea	guenthfuzzy	n	Field
Guarea	guidonia		
Guarea	kunthiana	n	Field
Guarea	macrophylla_2	n	Field
Guarea	macrophylla_3		
Guarea	macrophylla_ssp._pac	n	Field
Guarea	patricio		
Guarea	pterorhachis	n	Field
Guarea	pubescens	n	Field
Guarea	purusana	n	Field
Guarea	silvatica	n	Field
Guatteria	asplundiana_cf.	n	Field
Guatteria	brevicuspis_cf.	n	Field
Guatteria	citriodora	n	Field
Guatteria	gigante	n	Field
Guatteria	glaberrima	n	Field
Guatteria	gransmoothie	n	Field
Guatteria	multivenia	n	Field
Guatteria	planerdorita	n	Field
Guatteria	punctomarron	n	Field
Guatteria	recurvisepala	n	Field
Guettarda	acreana	n	Field
Gustavia	hexapetala	n	Field
Gustavia	longifolia	n	Field
Hasseltia	floribunda	y	Keeler
Hasseltia	hasseltomen		
Heisteria	acuminata	n	Field
Heisteria	flacarco	n	Field
Heisteria	grande	n	Field
Heisteria	multiglan		
Heisteria	nitida	n	Field
Helicostylis	tomentosa	n	Field
Herrania	cuatrecasana	n	Field
Herrania	nitida	n	Field
Hieronyma	alchorneoides_var.sti	y	Keeler
Hieronyma	oblonga	n	Field
Himatanthus	sucuuba	n	Field
Hirtella	excelsa	y	Field
Hirtella	racemosa_var.hexandra	y	Keeler
Huertea	glandulosa	y?	Field
Hymenaea	oblongifolia	n	Field
Hymenolobium	stipsericea		
Hyospathe	elegans	n	
Inga	3crasa	y	Herb
Inga	3oscura	y	Herb
Inga	4alitarco	y	Herb
Inga	6cuadra	y	Herb
Inga	acreana	y	Herb
Inga	alata	y	Herb
Inga	alba	y	Herb
Inga	auristellae	y	Herb
Inga	bourgonii	y	Herb
Inga	brachyrhachis	y	Herb
Inga	capitata	y	Herb/Keeler
Inga	cayennensis	y	Herb
Inga	chartacea	y	Herb
Inga	ciliata_ssp.subcapita	y	Herb
Inga	cinnamomea	y	Herb
Inga	cordatoalata	y	Herb
Inga	falsacre	y	Herb
Inga	heterophylla	y	Herb/Keeler
Inga	leiocalycina	y	Herb
Inga	marginata	y	Herb/Keeler
Inga	microcoma	y	Herb
Inga	multinervis	y	Herb
Inga	nobilis	y	Herb/Keeler
Inga	oerstediana	y	Herb/Keeler
Inga	poeppigiana	y	Herb
Inga	punctata	y	Herb/Keeler
Inga	ruiziana	y	Herb/Keeler
Inga	rusbyi	y	Herb
Inga	sapindoides	y	Herb/Keeler
Inga	sarayacuensis	y	Herb
Inga	sertulifera_ssp.lepto	y	Herb/Keeler
Inga	spectabilis	y	Herb
Inga	stellaeglabra	y	Herb
Inga	stipulacea	y	Herb
Inga	striata	y	Herb
Inga	tenuistipula	y	Herb
Inga	thibaudiana	y	Herb
Ilex	species_1	n	
Intsia	palembanica	n	
Irvingia	malayana	n	
Ixonanthes	icosandra	y	
Ixonanthes	reticulata	n	
Ixora	concinna	n	
Ixora	congesta	n	
Ixora	grandifolia_var.grandifolia	n	
Ixora	grandifolia_var.lanceolata	n	
Ixora	kingstoni	n	
Ixora	lobbii	n	
Ixora	nigricans	n	
Ixora	pendula	n	
Jackiopsis	ornata	n	
Kibara	coriacea	n	
Kibatalia	maingayi	n	
Kingstonia	nervosa	n	
Knema	conferta	n	
Knema	curtisii	n	
Knema	furfuracea	n	
Knema	hookeriana	n	
Knema	intermedia	n	
Knema	kunstleri	n	
Knema	laurina	n	
Knema	malayana	n	
Knema	patentinervia	n	
Knema	pseudolaurina	n	
Knema	scortechinii	n	
Knema	stenophylla	n	
Knema	sumatrana	n	
Koilodepas	longifolium	y	
Kokoona	reflexa	n	
Koompassia	malaccensis	n	
Lansium	domesticum	n	
Lasianthus	lowianus	n	
Lasianthus	species_1	n	
Lepisanthes	fruticosa	n	
Lepisanthes	senegalensis	n	
Lepisanthes	tetraphylla	n	
Lepisanthes	tetraphylla_var.hirta	n	
Leptonychia	glabra	n	
Licania	splendens	y	
Lindera	oxyphylla	n	
Lithocarpus	conocarpa	n	
Lithocarpus	curtisii	n	
Lithocarpus	cyclophorus	n	
Lithocarpus	ewyckii	n	
Lithocarpus	lucida	n	
Lithocarpus	rassa	n	
Lithocarpus	wallichiana	n	
Lithocarpus	wrayi	n	
Litsea	castanea	n	
Litsea	costalis	n	
Litsea	elliptica	n	
Litsea	erectinervia	n	
Litsea	ferruginea	n	
Litsea	firma	n	
Litsea	grandis	n	
Litsea	machilifolia	n	
Litsea	magnifica	n	
Litsea	nidularis	n	
Litsea	resinosa	n	
Litsea	tomentosa	n	
Litsea	umbellata_var.fuscotomento	n	
Litsea	wrayi	n	
Lophopetalum	floribundum	n	
Macaranga	conifera	y	
Macaranga	gigantea	y	
Macaranga	hosei	y	
Macaranga	hypoleuca	y	
Macaranga	lowii	y	
Macaranga	recurvata	y	
Madhuca	laurifolia	n	
Madhuca	malaccensis	n	
Mallotus	griffithianus	n	
Mallotus	leucodermis	y	
Mallotus	penangensis	y	
Mangifera	foetida	n	
Mangifera	gracilipes	n	
Mangifera	griffithii	n	
Mangifera	indica	n	
Mangifera	lagenifera	n	
Mangifera	macrocarpa	n	
Mangifera	magnifica	n	
Mangifera	quadrifida	n	
Mangifera	quadrifida_var.longipetiolata	n	
Mangifera	rufocostata	n	
Mangifera	species_1	n	
Mangifera	superba	n	
Mangifera	swintonioides	n	
Mastixia	pentandra	n	

Inga	thibaudiana_ssp.peltadenia	y	Herb
Inga	tocacheana	y	Herb
Inga	umbellifera	y	Herb/Keeler
Inga	umbratica	y	Herb
Inga	velutina	y	Herb
Inga	vismiifolia	y	Herb
Inga	yacoana	y	Herb
Iriartea	deltoidea	n	
Iryanthera	grandis	n	Field
Iryanthera	hostmanniana	n	Field
Iryanthera	hostmannii		
Iryanthera	juruensis	n	Field
Iryanthera	paraensis	n	Field
Ixora	acuminatissima	n	Field
Ixora	killipii	n	Field
Ixora	panurensis	n	Field
Jacaranda	copaia	y	Keeler
Jacaranda	glabra	n	Field
Jacaratia	digitata	y	Field
Justicia	sanchezioides	n	Field
Klarobelia	napoensis		
Kotchubaea	semisericea		
Lacistema	aggregatum	n	Field
Lacistema	med	n	Field
Lacmellea	lactescens	n	Field
Lacmellea	oblongata	n	Field
Lacunaria	crenada	n	Field
Lacunaria	jenmanii	n	Field
Laetia	procera	n	Field
Laxoplumeria	tessmannii		
Leandra	aristigera		
Leandra	blanca	n	Field
Lecointea	peruviana	n	Field
Leonia	crassa	n	Field
Leonia	glycycarpa_var.glycyc	n	Field
Leonia	glycycarpa_var.racemo	n	Field
Leonia	occidentalis		
Licania	arborea	n	Field
Licania	aubreuvillei_cf.		
Licania	caudata	y	Field
Licania	harlingii	n	Field
Licania	hipofuzzy	n	Field
Licania	longipedicellata	n	Field
Licania	longistyla	y	Field
Licania	macrocarpa	n	Field
Licania	nervifina	y	Field
Licania	reticulata	n	Field
Licania	silvae_cf.	n	Field
Licania	urseolaris	n	Field
Licania	zigzag	n	Field
Licaria	brillacuspi		
Licaria	cannella	n	Field
Licaria	guianensis		
Lindackeria	paludosa	n	Field
Lonchocarpus	seorsus_cf.	n	Field
Loreya	spruceana		
Lozania	klugii	n	Field
Lozania	mediana	n	Field
Lunania	parviflora		
Mabea	comun	n	Field
Mabea	superbrondu	n	Field
Machaerium	aristulatum	n	Field
Machaerium	finiparalel	n	Field
Macrocnemum	roseum		
Macrolobium	angustifolium	n	Field
Macrolobium	colombianum_cf.		
Macrolobium	sp.nov.	n	Field
Macrolobium	stenocladum	n	Field
Maquira	calophylla	n	Field
Maquira	guianensis	n	Field
Margaritaria	nobilis	n	Field
Margaritaria	sp.nov.	n	Field
Marila	pluricostata_cf.	n	Field
Marila	puntorojo	n	Field
Marmaroxylon	basijugum	y	Field
Matayba	ocho	n	Field
Matisia	bracteolosa	n	Field
Matisia	cordata	n	Field
Matisia	longiflora	n	Field
Matisia	malacocalyx	n	Field
Matisia	obliquifolia	n	Field
Matisia	oblongifolia	n	Field
Mayna	anelio	n	Field
Mayna	odorata	n	Field
Maytenus	ala	n	Field
Maytenus	ebenifolia_cf.	n	Field
Maytenus	macrocarpa_s.l.	n	Field
Meliicoccus	novagranatensis	n	Field
Meliosma	doly	n	Field
Meliosma	vasquezii	n	Field
Memora	cladotricha	n	Field
Mastixia	trichotoma	n	
Medusanthera	gracilis	n	
Melanochyla	angustifolia	n	
Melanochyla	auriculata	n	
Melanochyla	caesia	n	
Melanochyla	fulvinervia	n	
Melanochyla	species_1	n	
Melanochyla	tomentosa	n	
Melastoma	malabathricum	n	
Melientha	suavis	n	
Memecylon	amplexicaule	n	
Memecylon	cantleyi	n	
Memecylon	dichotomum	n	
Memecylon	excelsum	n	
Memecylon	lilacinum	n	
Memecylon	megacarpum	n	
Memecylon	minutiflorum	n	
Memecylon	oleifolium	n	
Memecylon	oligoneurum	n	
Memecylon	paniculatum	n	
Memecylon	pubescens	n	
Memecylon	wallichii	n	
Mesua	cornerii	n	
Mesua	ferrea	n	
Mesua	grandis	n	
Mesua	kunstleri	n	
Mesua	lepidota	n	
Mesua	racemosa	n	
Metadina	trichotoma	n	
Mezzettia	leptopoda	n	
Microdesmis	caseariifolia	n	
Micromelum	minutum	n	
Microtropis	valida	n	
Miliusa	longipes	n	
Millettia	atropurpurea	n	
Millettia	species_1	n	
Mischocarpus	pentapetalus	n	
Mitrephora	maingayi	n	
Monocarpia	marginalis	n	
Mussaendopsis	beccariana	n	
Myristica	cinnamomea	n	
Myristica	maingayi	n	
Myristica	malaccensis	n	
Myristica	maxima	n	
Nauclea	officinalis	n	
Neesia	synandra	n	
Neobalanocarpus	heimii	y	
Neolamarckia	cadamba	n	
Neolitsea	zeylanica	n	
Neoscortechinia	kingii	n	
Neoscortechinia	nicobarica	y	
Neoscortechinia	sumatrensis	y	
Neouvaria	foetida	n	
Nephelium	costatum	n	
Nephelium	eriopetalum	n	
Nephelium	hamulatum	n	
Nephelium	maingayi	n	
Nephelium	ophiodes	n	
Nephelium	pallens	n	
Nothaphoebe	umbelliflora	n	
Ochanostachys	amentacea	n	
Oncodostigma	monosperma	n	
Oncosperma	horridum	n	
Orania	sylvicola	n	
Ormosia	penangensis	n	
Ormosia	venosa	n	
Osmelia	maingayi	n	
Palaquium	clarkeanum	n	
Palaquium	gutta	n	
Palaquium	hexandrum	n	
Palaquium	maingayi	n	
Palaquium	obovatum	n	
Palaquium	stellatum	n	
Pandanus	monotheca	n	
Pandanus	yvanii	n	
Paranephelium	xestophyllum	n	
Parartocarpus	bracteata	n	
Parashorea	densiflora	n	
Parastemon	urophyllus	y	
Parinari	costata	y	
Parinari	elmeri	y	
Parinari	oblongifolia	y	
Parishia	insignis	n	
Parishia	paucijuga	n	
Parkia	speciosa	y	
Paropsia	vareciformis	y	
Pavetta	graciliflora	n	
Pavetta	species_1	n	
Payena	lucida	n	
Payena	maingayi	n	
Pentace	strychnoidea	n	

Mezilaurus	extendido		
Mezilaurus	triunca	n	Field
Miconia	abbreviata	n	Field
Miconia	acutipetala	n	Field
Miconia	ampla		
Miconia	atenunodu		
Miconia	aurea_cf.	n	Field
Miconia	bubalina	n	Field
Miconia	cazaletii		
Miconia	centrodesma		
Miconia	chocofres	n	Field
Miconia	corine	n	Field
Miconia	crasarb		
Miconia	decurrens	n	Field
Miconia	elata	n	Field
Miconia	elatita	n	Seed/Field
Miconia	falsarug		
Miconia	fosteri	n	Field
Miconia	grancordata	n	Field
Miconia	grandifolia	n	Field
Miconia	juanito		
Miconia	karina	n	Field
Miconia	klugii	n	Field
Miconia	lamprophylla	n	Field
Miconia	lugonis		
Miconia	medglauca	n	Field
Miconia	multispicata	n	Field
Miconia	napoana	n	Field
Miconia	nerviblanco	n	Field
Miconia	nervosa	n	Field
Miconia	pablo		
Miconia	peqdorada	n	Field
Miconia	pilgeriana	n	Field
Miconia	poeppigii	n	Field
Miconia	prasina	n	Field
Miconia	pterocaulon	n	Seed
Miconia	punctata		
Miconia	purpono	n	Field
Miconia	roselegante		
Miconia	rugosa		
Miconia	sachapurp	n	Field
Miconia	schunkei	n	Field
Miconia	smaragdina	n	Field
Miconia	tipica	n	Field
Miconia	tomentosa	n	Field
Miconia	trinervia	n	Field
Miconia	triplinervis	n	Field
Miconia	zubenetana	n	Field
Micropholis	brochidodroma	n	Field
Micropholis	dorada	n	Field
Micropholis	egensis	n	Field
Micropholis	guyanensis_ssp.duckea	n	Field
Micropholis	venulosa	n	Field
Minquartia	guianensis	n	Field
Mollia	gracilis		
Mollinedia	killipii	n	Field
Mollinedia	rojimpreso		
Mollinedia	spinilarga	n?	Field
Mollinedia	tomentosa	n	Field
Mollinedia	tridentata	n?	Field
Moronobea	pablo		
Mouriri	acutiflora_cf.		
Mouriri	grancoala	n	Field
Mouriri	grandiflora	n	Field
Mouriri	intermedia	n	Field
Mouriri	myrtilloides	n	Field
Myrcia	blancanueva	n	Field
Myrcia	nitida	n	Field
Myrcia	pielizard	n	Field
Myrcia	platatomen	n	Field
Myrcia	pseudonitida	n	Field
Myrcia	splendens	n	Field
Myrcia	vertipub	n	Field
Myrciaria	amazonica	n	Field
Myrciaria	floribunda	n	Field
Myrciaria	intermed	n	Field
Myroxylon	balsamum	n	Field
Naucleopsis	glabra	n	Field
Naucleopsis	imitans_cf.	n	Field
Naucleopsis	krukovii	n	Field
Naucleopsis	krukovii_cf.	n	Seed
Naucleopsis	ulei	n	Field
Nectandra	largibrachi	n	Field
Nectandra	lineata	n	Field
Nectandra	membranacea	n	Field
Nectandra	microcarpa	n	Field
Nectandra	oppositifolia	n	Seed/Field
Nectandra	skinny2		
Nectandra	skinnyret		
Nectandra	viburnoides	n	Field
Nectandra	yarinensis_cf.	n	Field
Pentace	triptera	n	
Pentaspadon	motleyi	n	
Pentaspadon	velutinus	n	
Pertusadina	eurhyncha	n	
Phaeanthus	crassipetalus	n	
Phaeanthus	ophthalmicus	n	
Pholidocarpus	macrocarpus	n	
Phyllanthus	emblica	n	
Pimelodendron	griffithianum	y	
Pimelodendron	macrocarpum	n	
Pinanga	malaiana	n	
Pinanga	riparia	n	
Pithecellobium	splendens	y	
Planchonella	maingayi	n	
Planchonia	grandis	n	
Platea	latifolia	n	
Platea	species_1	n	
Podocarpus	motleyi	n	
Polyalthia	cinnamomea	n	
Polyalthia	clavigera	n	
Polyalthia	glauca	n	
Polyalthia	hypoleuca	n	
Polyalthia	jenkinsii	n	
Polyalthia	lateriflora	n	
Polyalthia	obliqua	n	
Polyalthia	rumphii	n	
Polyalthia	sclerophylla	n	
Polyalthia	stenopetala	n	
Polyalthia	sumatrana	n	
Polyosma	laete-virens	n	
Pometia	pinnata_var.alnifolia	y	
Popowia	pisocarpa	n	
Popowia	tomentosa	n	
Porterandia	anisophylla	n	
Pouteria	malaccensis	n	
Prainea	limpato	n	
Prismatomeris	glabra	n	
Prismatomeris	species_1	n	
Prunus	arborea	y	
Prunus	arborea_var.stipulaceum	y	
Prunus	grisea	y	
Pseudoeugenia	singaporensis	n	
Pseuduvaria	macrophylla	n	
Psychotria	griffithii	n	
Psychotria	rostrata	n	
Psydrax	maingayi	n	
Psydrax	species_10	n	
Psydrax	species_8	n	
Pteleocarpa	lamponga	n	
Pternandra	coerulescens	n	
Pternandra	echinata	n	
Pterocymbium	tubulatum	n	
Ptychopyxis	caput-medusae	n	
Ptychopyxis	costata	y	
Pyrenaria	acuminata	n	
Quercus	argentata	n	
Quercus	gemelliflora	n	
Radermachera	pinnata	y	
Reinwardtiodendron	cinereum	n	
Rhodamnia	cinerea	n	
Rinorea	anguifera	n	
Rinorea	horneri	n	
Rinorea	sclerocarpa	n	
Rothmannia	macrophylla	n	
Ryparosa	acuminata	n	
Ryparosa	fasciculata	n	
Ryparosa	kunstleri	n	
Sandoricum	beccarianum	n	
Sandoricum	koetjape	n	
Santiria	apiculata	n	
Santiria	conferta	n	
Santiria	griffithii	n	
Santiria	laevigata	n	
Santiria	oblongifolia	n	
Santiria	rubiginosa	n	
Santiria	tomentosa	n	
Sapium	baccatum	y	
Sapium	discolor	y	
Saprosma	scortechinii	n	
Saraca	declinata	y	
Saraca	thaipingensis	y	
Sarcotheca	griffithii	n	
Sarcotheca	monophylla	n	
Sauropus	androgynus	n	
Scaphium	linearicarpum	n	
Scaphium	macropodum	n	
Scaphocalyx	spathacea	n	
Schoutenia	accrescens	n	
Scleropyrum	wallichianum	n	
Scolopia	spinosa	y	
Semecarpus	curtisii	n	

Neea	altomini		
Neea	angostintersec	n	Field
Neea	aniboid	n	Field
Neea	bajio	n	Field
Neea	claudia	n	Field
Neea	comun	n	Field
Neea	daniela		
Neea	fuzzy	n	Field
Neea	garci	n	Field
Neea	gigante	n	Field
Neea	granredonda	n	Field
Neea	micro	n	Seed
Neea	mini	n	Field
Neea	paty	n	Field
Neea	popular	n	Field
Neea	supercrasa	n	Field
Neea	tela	n	Field
Neea	verdeclara	n	Field
Neea	verdeseca	n	Field
Neosprucea	grandiflora	y?	Field
Ochroma	pyramidale	n	Field
Ocotea	alamembra	n	Field
Ocotea	argyrophylla	n	Field
Ocotea	bayelshmi	n	Field
Ocotea	bofo_cf.	n	Field
Ocotea	cernua	n	Field
Ocotea	cujumari_cf.		
Ocotea	floribunda	n	Field
Ocotea	javitensis	n	Field
Ocotea	laurita	n	Field
Ocotea	leucoxylon		
Ocotea	longifolia	n	Field
Ocotea	luis	n	Field
Ocotea	nervijens	n	Field
Ocotea	oblonga	n	Field
Ocotea	scalariformis		
Ocotea	tessmannii_cf.	n	Field
Ocotea	ucayalensis		
Oenocarpus	bataua	n	
Oenocarpus	mapora	n	
Ophiocaryon	heterophyllum	n	Field
Ormosia	amazonica		
Ormosia	elata	n	Field
Ormosia	paraensis	n	Field
Ossaea	boliviensis		
Otoba	glycycarpa	n	Field
Ouratea	flaquita	n	Field
Oxandra	mediocris	n	Field
Oxandra	riedeliana_aff.	n	Field
Pachira	insignis	n	Field
Pachira	punga-schunkei	n	Field
Palicourea	grandiflora	n	Field
Palicourea	guianensis	n	Field
Palicourea	lasiantha		
Palicourea	nigricans	n	Field
Paradrypetes	subintegrifolia	n	Field
Parinari	klugii	n	Field
Parkia	balslevii		
Parkia	multijuga	y	
Parkia	nitida	y	Keeler
Parkia	velutina	y	
Patinoa	paraensis	n	Field
Paullinia	xestophylla	n	Field
Pausandra	trianae	y	Field
Pentagonia	parvifolia	n	Field
Pentagonia	williamsii_cf.	n	Field
Pentagonia	wurdackii	n	Field
Pentaplaris	huaoranica		
Pera	bicolor		
Pera	duguet	n	Field
Perebea	angustifolia	n	Field
Perebea	guianensis_cf.	n	Field
Perebea	guianensis_ssp._acan		
Perebea	mollis	n	Field
Perebea	tessmannii	n	Field
Perebea	xanthochyma	n	Field
Persea	areolatocostae	n	Field
Persea	persemed	n	Field
Persea	pseudofasciculata	n	Field
Phyllanthus	attenuatus	n	Field
Phyllanthus	micro		
Phytelephas	tenuicaulis	n	
Picramnia	juniniana	n	Field
Picramnia	magnifolia	n	Field
Picramnia	mini	n	Field
Picramnia	pubibul	n	Field
Picramnia	pubirecta		
Picramnia	sellowii_ssp.sprucean	n	Field
Piper	aequale		
Piper	albertsmithii		
Piper	arboreum	n	Field
Semecarpus	rufovelutinus	n	
Shorea	acuminata	y	
Shorea	bracteolata	y	
Shorea	dasyphylla	y	
Shorea	guiso	y	
Shorea	hopeifolia	n	
Shorea	lepidota	y	
Shorea	leprosula	y	
Shorea	macroptera	y	
Shorea	maxwelliana	n	
Shorea	multiflora	n	
Shorea	ochrophloia	y	
Shorea	ovalis	y	
Shorea	parvifolia	n	
Shorea	pauciflora	y	
Sindora	coriacea	n	
Sindora	echinocalyx	n	
Sindora	velutina	n	
Sindora	wallichii	n	
Sloanea	javanica	n	
Stelechocarpus	cauliflorus	n	
Stemonurus	malaccensis	n	
Stemonurus	umbellatus	n	
Sterculia	coccinea	n	
Sterculia	cordata	n	
Sterculia	hispidissima	n	
Sterculia	macrophylla	n	
Sterculia	parviflora	n	
Sterculia	rubiginosa	n	
Sterculia	species_1	n	
Streblus	elongatus	n	
Strombosia	javanica	n	
Strombosia	maingayi	n	
Styrax	benzoin	n	
Suregada	multiflora	n	
Symplocos	cerasifolia	n	
Symplocos	cochinchinensis	n	
Symplocos	crassipes	n	
Symplocos	ophirensis	n	
Symplocos	rubiginosa	n	
Tabernaemontana	corymbosa	n	
Tabernaemontana	malaccensis	n	
Talauma	candollii	n	
Tarenna	costata	n	
Tarenna	maingayi	n	
Tarenna	mollis	n	
Tarenna	species_11	n	
Tarenna	species_8	n	
Teijsmanniodendron	coriaceum	n	
Teijsmanniodendron	simplicifolium	n	
Terminalia	bellirica	n	
Terminalia	citrina	y	
Terminalia	phellocarpa	y	
Terminalia	subspathulata	n	
Ternstroemia	corneri	n	
Tetrardisia	porosa	n	
Thottea	grandiflora	n	
Timonius	species_1	n	
Timonius	wallichianus	n	
Trema	tomentosa	n	
Trigonachras	acuta	n	
Trigoniastrum	hypoleucum	n	
Trigonochras	species_1	n	
Trigonopleura	malayana	n	
Trigonostemon	laevigatus	n	
Trigonostemon	longifolius	n	
Trigonostemon	malaccanus	n	
Triomma	malaccensis	n	
Trivalvaria	macrophylla	n	
Trivalvaria	nervosa	n	
Trivalvaria	pumila	n	
Turpinia	ovalifolia	y	
Unknown	sp.	n	
Urophyllum	glabrum	n	
Urophyllum	hirsutum	n	
Vatica	bella	y	
Vatica	maingayi	n	
Vatica	pauciflora	y	
Vernonia	arborea	n	
Vitex	pinnata	n	
Vitex	quinata	n	
Walsura	chrysogyne	n	
Walsura	pinnata	n	
Xanthophyllum	affine	y	
Xanthophyllum	amoenum	n	
Xanthophyllum	chartaceum	n	
Xanthophyllum	ellipticum	n	
Xanthophyllum	eurhynchum	n	
Xanthophyllum	griffithii	n	
Xanthophyllum	rufum	n	
Xanthophyllum	scortechinii	n	

Piper	augustum	n	Field
Piper	bellidi	n	Field
Piper	bellidifolium	n	Field
Piper	bulada	n	Field
Piper	cordipub	n	Field
Piper	crassinervium	n	Field
Piper	darkcrasa	n	Field
Piper	falsafuzzy	n	Field
Piper	fuzicort	n	Field
Piper	granmini		
Piper	macrophyllum		
Piper	maranyonense	n	Field
Piper	minibroqui	n	Field
Piper	minicord		
Piper	nervi		
Piper	obchic	n	Field
Piper	obglab	n	Field
Piper	obnervi	n	Field
Piper	obtomen	n	Field
Piper	obvil	n	Field
Piper	peltatum		
Piper	pubescens	n	Field
Piper	redonda		
Piper	renato	n	Field
Piper	reticulatum	n	Field
Piper	scab	n	Field
Piper	sesivil	n	Field
Piptadenia	pteroclada		
Platymiscium	pinnatum		
Platymiscium	stipulare		
Pleurothyrium	bifidum	n	Field
Pleurothyrium	cinereum		
Pleurothyrium	cuneifolium	n	Field
Pleurothyrium	glabrifolium	n	Field
Pleurothyrium	insigne	n	Field
Pleurothyrium	willamsii_cf.	n	Field
Plinia	caulimpreso	n	Seed/Field
Plinia	cortezablanca	n	Field
Plinia	pseudomouriri	n	Field
Plinia	unop	n	Field
Posoqueria	latifolia	n	Field
Posoqueria	longiflora	n	Field
Potalia	resinifera	n	Field
Poulsenia	armata	n	Field
Pourouma	bicolor	n	Field
Pourouma	deeplob	n	Field
Pourouma	guianensis_ssp.guiane	n	Field
Pourouma	medioarco	n	Field
Pourouma	minor	y	Field
Pourouma	napoensis		
Pourouma	persecta	n	Field
Pourouma	tomentosa	n	Field
Pouteria	anchalisa	n	Field
Pouteria	angostaloopy	n	Field
Pouteria	baehniana	n	Field
Pouteria	bilocularis	n	Field
Pouteria	caimito		
Pouteria	cuspidata_ssp.dura		
Pouteria	cuspidata_ssp.robusta		
Pouteria	doradagrande	n	Field
Pouteria	durlandii	n	Field
Pouteria	durlandii_ssp.pubicar	n	Field
Pouteria	glomerata	n	Field
Pouteria	gracilis	n	Field
Pouteria	granopaca	n	Field
Pouteria	guianensis	n	Field
Pouteria	hispida_cf.	n	Field
Pouteria	krukovii	n	Field
Pouteria	largamembra	n	Field
Pouteria	multiflora	n	Field
Pouteria	nudipetala	n	Field
Pouteria	peciolote	n	Field
Pouteria	platyphylla	n	Field
Pouteria	procera	n	Field
Pouteria	redondita	n	Field
Pouteria	reticulata	n	Field
Pouteria	rostrata	n	Seed/Field
Pouteria	smedobov	n	Field
Pouteria	torta_ssp.glabra	n	Field
Pouteria	torta_ssp.tuberculata	n	Field
Pouteria	tortachica	n	Field
Pouteria	tortachicorden		
Pouteria	trilocularis	n	Field
Pouteria	vernicosa	n	Field
Pradosia	atroviolacea	n	Field
Prestoea	schultzeana	n	
Protium	amazonicum	n	Seed/Field
Protium	aracouchini	n	Field
Protium	brillanodu	n	Field
Protium	glabrescens	n	Field
Protium	grannodu	n	Field
Xanthophyllum	stipitatum	n	
Xanthophyllum	wrayi	n	
Xerospermum	species_1	n	
Xerospermum	noronhianum	y	
Xylopia	caudata	n	
Xylopia	elliptica	n	
Xylopia	ferruginea_var.ferruginea	n	
Xylopia	ferruginea_var.oxyantha	n	
Xylopia	fusca	n	
Xylopia	magna	n	
Xylopia	malayana	n	

Protium	guianense	n	Field
Protium	nodulosum	n	Field
Protium	sagotianum	n	Field
Protium	trifoliolatum		
Protium	unifoliolatum		
Prunus	debilis	y	Field
Pseudolmedia	laevigata	n	Field
Pseudolmedia	laevis	n	Field
Pseudolmedia	macrophylla	n	Field
Pseudolmedia	rigida_ssp.eggersii	n	Field
Pseudomalmea	diclina	n	Field
Pseudopiptadenia	suaveolens	y	Keeler
Psychotria	borjensis	n	Field
Psychotria	brachybotrya		
Psychotria	caerulea	n	Field
Psychotria	deflexa	n	Field
Psychotria	dracula	n	Field
Psychotria	huampamiensis	n	Field
Psychotria	membradomat	n	Field
Psychotria	officinalis		
Psychotria	ondulada	n	Field
Psychotria	ostreophora	n	Field
Psychotria	poeppigiana	n	Field
Psychotria	remota	n	Field
Psychotria	robin	n	Seed
Psychotria	stenostachya	n	Field
Psychotria	viridis	n	Field
Pterocarpus	rhorii_cf.	n	Field
Qualea	paraensis	y	Field
Quararibea	amazonica	n	Field
Quararibea	bilobata_cf.	n	Field
Quararibea	wittii	n	Field
Quiina	amazonica		
Quiina	florida	n	Field
Quiina	grandifolia_cf.	n	Field
Quiina	macrophylla_cf.	n	Field
Quiina	mediana	n	Field
Randia	bigfuzzy	n	Field
Randia	gorky	n	Field
Randia	manolo	n	Field
Rauvolfia	praecox		
Rhamnidium	elaeocarpum	n	Field
Rhodostemonodaphne	grandis		
Rhodostemonodaphne	juruensis	n	Field
Rhodostemonodaphne	kunthiana	n	Field
Rhodostemonodaphne	licanoides		
Rhodostemonodaphne	sordida		
Richeria	racemosa	n	Field
Rinorea	apiculata	n	Field
Rinorea	lindeniana	n	Field
Rinorea	viridifolia	n	Field
Rollinia	chrysocarpa	n	Field
Rollinia	cuspidata	n	Field
Rollinia	dolichopetala	n	Field
Rollinia	flacaglabra	n	Field
Rollinia	glomerulifera	n	Field
Rollinia	palida		
Rollinia	pittieri	n	Field
Roupala	montana		
Ruagea	insignis	n	Field
Rudgea	bracteata	n	Field
Rudgea	fina	n	Field
Rudgea	japurensis		
Rudgea	nodincho	n	Field
Ruizodendron	ovale	n	Field
Ryania	speciosa	n	Field
Ryania	speciosa_var._toment	n	Field
Sagotia	racemosa	n	Field
Salacia	atenucrasa	n	Field
Salacia	macrantha_cf.	n	Field
Sapium	glandulosum_cf.	y	Field/Keeler
Sapium	largident	y	Field
Sapium	redonda		
Sarcaulus	brasiliensis	n	Field
Sarcaulus	peloscostimp	n	Field
Sarcaulus	romolerouxii	n	Field
Sarcaulus	vestitus	n	Field
Schefflera	morototoni	n	Field
Schizolobium	parahyba		
Schoenobiblus	perubianus_cf.	n	Field
Schoepfia	lucida	n	Field
Senna	bacillaris		
Senna	macrophylla_var.gigan	y	Keeler
Senna	trolliiflora	y	Keeler
Simaba	orinocensis	n	Field
Simaba	paraensis	n	Field
Simaba	polyphylla	n	Field
Simarouba	amara	y	Keeler
Simira	cordifolia	n	Field
Simira	rubescens_cf.	n	Field
Siparuna	angostadiente	n	Field

Siparuna	bigll3	n	Field
Siparuna	cervicornis	n	Field
Siparuna	cuspidata	n	Field
Siparuna	decipiens	n	Field
Siparuna	ges		
Siparuna	macrotepala	n	Field
Siparuna	poeppigii	n	Field
Siparuna	thecaphora(1)	n	Field
Siparuna	thecaphora(2)	n	Field
Siparuna	thecaphora(3)	n	Field
Sloanea	fragans	n	Field
Sloanea	gigapulvi	n	Field
Sloanea	granredonda	n	Field
Sloanea	guia	n	Field
Sloanea	membramini		
Sloanea	nervi		
Sloanea	oak	n	Field
Sloanea	obtusidolia	n	Field
Sloanea	oppd		
Sloanea	pequrva	n	Field
Sloanea	polvorojo	n	Field
Sloanea	pubescens_cf.	n	Field
Sloanea	robusta_cf.	n	Field
Sloanea	robustipeq	n	Field
Sloanea	rufisessi	n	Field
Sloanea	synandra	n	Field
Smilax	nervipromin		
Socratea	exorrhiza	n	
Solanum	altissimum	n	Field
Solanum	grandiflorum	n	Field
Solanum	granmini	n	Field
Solanum	lepidotum		
Solanum	leptopodum		
Solanum	malletii	n	Field
Solanum	scabrosa		
Solanum	sessile		
Solanum	silvaticum		
Sorocea	muriculata	n	Field
Sorocea	pubivena_ssp.hirtella	n	Field
Sorocea	pubivena_ssp.oligotricha	n	Field
Sorocea	sarcocarpa_cf.		
Sorocea	steinbachii	n	Field
Spondias	mombin	n	Field
Sterculia	apeibophylla	n	Field
Sterculia	apetala		
Sterculia	colombiana	n	Field
Sterculia	frondosa	n	Field
Sterculia	tessmannii	n	Field
Strychnos	darienensis_cf.		
Stryphnodendron	porcatum		
Stylogyne	cauliflora		
Stylogyne	longifolia	n	Field
Styrax	cordatus		
Styrax	guyanensis		
Swartzia	arborescens	n	Field
Swartzia	benthamiana	n	Field
Swartzia	bombycina	n	Field
Swartzia	cardiosperma	n	Field
Swartzia	multijuga	n	Field
Swartzia	simplex	n	Field
Symphonia	globulifera	n	Field
Symplocos	arechea	n?	Field
Tabebuia	ochracea	y	Keeler
Tabebuia	serratifolia	y	Keeler
Tabernaemontana	pequea	n	Field
Tabernaemontana	sananho	n	Field
Tachigali	formicarum	n	Field
Tachigali	paniculata		
Tachigali	paraensis		
Talauma	ovata_cf.	n	Field
Talauma	tyana	n	Field
Talisia	2-retic		
Talisia	cerasina		
Talisia	gigapulvi	n	Field
Talisia	pulvinote		
Tapirira	guianensis	n	Field
Tapirira	myriantha_cf.	n	Field
Tapirira	obtusa	n	Field
Tapura	juruana	n	Field
Tapura	peruviana	n	Field
Terminalia	amazonia	y	Keeler
Terminalia	axilpub	n	Field
Terminalia	ob	y	Field
Terminalia	oblonga	n	Field
Tessmannianthus	heterostemon	n	Field
Tetragastris	panamensis	n	Field
Tetrathylacium	macrophyllum	n	Field
Tetrorchidium	macrophyllum	y	Field
Theobroma	speciosum	n	Field
Theobroma	subincanum	n	Field
Thyrsodium	paraense_cf.		

Tococa	guianensis		
Tocoyena	burnham	n	Field
Tovomita	alargada	n	Field
Tovomita	arbol		
Tovomita	grancrasa	n	Field
Tovomita	grande	n	Field
Tovomita	tyana	n	Field
Toxiphon	trifoliolatum		
Trattinnickia	glaziovii_cf.		
Trattinnickia	lancifolia		
Trattinnickia	lawrencei_ssp._boliv		
Trema	micrantha	n	Field
Trichilia	adolfii		
Trichilia	cip	y	Keeler
Trichilia	densapunta		
Trichilia	elsae	n	Field
Trichilia	laxipaniculata		
Trichilia	maynasiana	n	Field
Trichilia	micrantha	n	Field
Trichilia	obovata	n	Field
Trichilia	pallida	n	Field
Trichilia	pleeana_cf.	n	Field
Trichilia	poeppigii	n	Field
Trichilia	quadrijuga	n	Field
Trichilia	rubra	n	Field
Trichilia	septentrionalis	n	Field
Trichilia	solitudinis	n	Field
Trigynaea	triplinervia	n	Field
Triplaris	dugandii		
Trymatococcus	amazonicus	n	Field
Turpinia	occidentalis	n	Field
Unonopsis	floribunda	n	Field
Unonopsis	veneficiorum	n	Field
Urera	baccifera	n	Field
Vantanea	guianensis	n	Field
Virola	dixonii	n	Field
Virola	duckei	n	Field
Virola	elongata	n	Field
Virola	flexuosa	n	Field
Virola	fuzzy		
Virola	microfuzzy	n	Field
Virola	mollis	n	Field
Virola	multinervia	n	Field
Virola	obovata	n	Field
Virola	pavo	n	Field
Virola	surinamensis		
Virola	theiodora		
Vismia	baccifera	n	Field
Vismia	bosque	n	
Vismia	floribunda	n	Field
Vismia	macrophylla		
Vismia	sprucei		
Vitex	schunkei	n	Field
Vitex	triflora	n	Field
Vochysia	braceliniae	n	Field
Vourana	anomala	n	Field
Warszewiczia	cordata	n	Field
Wettinia	maynensis	n	
Wittmackanthus	stanleyanus	n	Field
Xylopia	aromatica_cf.	n	Field
Xylopia	cuspidata	n	Field
Xylopia	hiena		
Xylosma	tessmannii_cf.		
Zanthoxylum	glanredonda	n	Field
Zanthoxylum	margland	n	Field
Zanthoxylum	nervi		
Zanthoxylum	pendiente		
Zanthoxylum	perp		
Zanthoxylum	setulosum	y	Keeler
Zanthoxylum	sprucei_aff.	n	Field
Zanthoxylum	suave		
Zizyphus	cinnamomum		
Zygia	heteroneura	y	Field
Zygia	mediana	y	Field
zz	zz		